ESSAYS FOR WOMEN.

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(BOSTON).

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ESSAYS FOR WOMEN.

BY

MARY JANE HALL, M.D. (BOSTON.)

> "Now in this work of education, in this serious matter of preparation of a woman for life, how much knowledge is needed to struggle against that great ignorance which we call innocence."—VICTOR HUGO (Chap. iv.) *Saint Denis " Les Miserables."*

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CONTENTS.

CHAPTER I.

PAGE.
TO KNOW OURSELVES - - - - - 9

CHAPTER II.

THE BONY FRAMEWORK - - - - - 15

CHAPTER III.

MUSCULAR STRUCTURE - - - - - 32

CHAPTER IV.

THE NERVOUS SYSTEM - - - - - 45

CHAPTER V.

THE CIRCULATION - - - - - - 60

CHAPTER VI.

ALIMENTATION - - - - - - - 74

CHAPTER VII.

ESOTERIC STRUCTURE AND FUNCTIONS, NORMAL AND ABNORMAL CONDITIONS, AIDS TO MITIGATION AND CURE - - - 92

CHAPTER VIII.

ESOTERIC STRUCTURE. THE STORY OF GERMINATION - - - - - - 107

CHAPTER IX.

THE PESSARY - - - - - - - 125

CHAPTER X.

ON HOMŒOPATHY - - - - - - 127

CHAPTER I.

TO KNOW OURSELVES.

WOMEN are asking about themselves. From searching among things wise and good, and far off, they begin to suspect that the well-being of the wide far-off world is the result of the well-being of their individual world, of their own small cosmos. That as charity begins at home, useful knowledge begins there also. The home is pre-eminently the woman's sphere, and it behoves her to know all there is that can help her in the management of it. It is not enough that she should bring her children into the world, she must also keep them there, and in such form as they and the world shall have made progress, in direct consequence of their having lived.

A mother's ignorance of her power does

not release her from the responsibilities of that power. The period when she can make her impression is familiarly illustrated by the relation of the twig to the tree; or the clay in the hands of the potter. If she lose her opportunity, or misrule during her sway, the twig stiffens, and the clay hardens, and, afterwards, lament over deformity is useless; all who come near must suffer from it; those who come nearest, the most.

The mother moulds the mind of her child from its earliest existence; the father moulds it too, but chiefly through the mother. The mother feels so keenly all concerning the father, that here, as elsewhere, union is strength. But it is because the mother's place is first, that there is truth to-day in the story of the Garden of Eden. Woman gives to woman of that which is hers, and she is responsible for the man to the degree that she is responsible for herself. Thus it is woman rules the world. To have wise men, we must be wise ourselves; we must think with an earnest purpose, we must, like Christ before Pilate, acknowledge the supremacy of

Truth. How difficult a thing that is, can be told by those only who go through life, striving always to tell no lie, to be wise as the serpent, and harmless as the dove.

Our duty to Truth lies not always only in speaking no lie, but in an earnest endeavour to search out and know whether those things are so. Great men usually have great mothers, whose mind comes to the world through the son, when circumstances have denied its egress in her own personality. So the first step to have good enlightened men is to make the mothers intelligent. Unenlightened training may fail of its object, and punishment may foster passion. It is my purpose in placing anything before my sisters to tell them what I have had the opportunity of learning of the human body, and what measures for avoidance of evil and repair of damage suggest themselves, for, "Take us the foxes, the little foxes that spoil our grapes, for our vines have tender grapes," is the echo of many a woman's heart. It may be, some woman can see the way to be impressed with the duty of keeping healthy this body, which is the means the Creator has given us of communication with the rest of His Creation, to put us *en rapport* with the world around us. It may seem all through life, that duty is laid on woman and pleasure on man, but that is only seemingly so; men have their duty as strong for them as women, but being women, we will busy ourselves with our own duty, and that will go towards securing that the men do theirs.

Being of the same sex, we may, by a commonalty of interest and feeling, understand each other, when we speak, for without a common power of suffering and enjoying, it is useless to attempt passing on an idea: it could not be received and applied. The womanhood forms the bond between us—we are all bearing the same yoke—we may all draw at the harvest. When we speak of ourselves, we know what is meant though the thing be only half-way spoken, because we share. And we know how difficult it is to tell of a thing, in which the listener has no part or lot, the talking is harder, and the results less perfect; the man cannot understand the woman as the woman can. There are instincts in the woman that prevent her speaking to the man in such a way that, be he ever so willing, he would be able to fathom the meaning of the girl, or even the woman. The girl has not learned to know herself, the woman may. It is well she should know the general construction of her frame, so that she can think of herself in a common-sense way, instead of with the superstitious fear that grows out of, and feeds on ignorance. She will, by learning about herself, be able, judiciously, to direct her labours and her pleasures, so as to avoid the excesses, which will entail on her offspring the curse unto the third and fourth generations.

People, whose ancestors have already had their full measure of presumption, may not presume again, and not soon suffer; these are the delicate people. It is everybody's wish to be happy, and all are striving after it, some using the very means to destroy that happiness by destroying their health, often through ignorance. Their mistakes and excesses leave their mark for the coming generations, not merely generation. They injure the wrong doer, and those who come in her way; they give reality to the curse, so the study that will enable us to retain the counterpart blessing must be a hallowed one.

Our bodies spring from the earth, and they go back to her, and from beginning to end we are bound by her laws. The more perfectly do we recognise these laws, and the more closely do we abide by them, the nearer do we approach to that state which we call health or happiness or holiness.

CHAPTER II.

THE BONY FRAMEWORK.

THERE is nothing on earth exceeding in perfection of conception and in masterly execution, this human frame of ours. The more you examine it, the more you must admire and wonder, and then turn to observe how man, in his building, follows the same principles of structure on which he himself is built.

He makes a frame and covers it, and fills it in with the things needful. The general plan of his own structure pervades his ideas.

Bones form the framework of our bodies. They are made of the best materials in just the proportions, and of the best shape for their purpose. They are preceded by cartilaginous models. Cartilage is a sort of soft bone. At the ends of the bones where they join each other they remain soft, but the body of the bone stiffens and becomes hard as life advances. All healthy people harden at about the same rate; any marked difference would argue an aberration of health.

Sometimes the bones enclose soft tissues, sometimes the soft tissues are fastened on to them; the softest tissues are protected by the completest surrounding of the hardest bone; nothing is wasted, nothing is overlooked.

The bones of the head are the hardest and thinnest bones, and they enclose the softest and most important tissues, being the chamber from which issue all the orders for the body, the quality of which fixes the fortunes of the individual, and decides the destinies of nations; that makes the difference between the way one woman and another will sweep a room, or rule a kingdom. The bone here needs to be the hardest, for the sake of the very love of our lives, if it be a fact that people with most brain power have the greatest power of loving.

Leaving the head, the bone is still hard and carefully formed to enclose long lines of matter going down from the brain to regulate the remotest portions. The lines of matter from the brain are known as the spinal column. The divisions of the bone are known as vertebræ, and are among the earliest formations of the embryo. The separation into small pieces allows of bending backwards and forwards and to the sides. The whole is known as the backbone, and, running from the head, is connected by successive joints, to every other bone. So important is this structure to the general subsistence, that in the moral world we refer to it to express a man's power or lack of power to do his duty. "England expects that every man this day will do his duty;" then England expects she has sent out men with straight backs.

It need not be inferred from this that the backs should look, as some would have it, as though they had swallowed the poker. This would be a mistake. Notice a healthy person's back, your baby's, as it lies across your lap, and you will see certain curves that are all right, and planned to serve a purpose. They are adjusted so as to bring the whole body straight up, in position to balance itself. From the upper part of this line of small-jointed bones, there branches off a circular bone that forms the shoulders, and gives rise to and supports the arms, and from the lower end a larger circular bone, that forms the hips, and gives rise to and supports the legs. The upper circle encloses a smaller circle; that is repeated with a decreasing degree of completeness most of the way down the spine, or backbone. Each half ring of bone is called a rib. All over the region of the heart and upper lungs they meet, and complete the circle, being joined by the bone we call the breast-bone. They begin to be cut away in front of the stomach, liver, and intestines; because, while these parts must be protected, they must have room to expand, for they receive and prepare not only their own nourishment, but also that of all the system, not only the food, but the air. There are in all twelve ribs on each side, the same in man as in woman. Adam's successors have not given their ribs for their

Eves. From the shoulder, protecting the back of the lungs, on either side, spreads a wing of bone, known as the shoulder-blade. This in the Frenchwoman is relatively longer than in the English woman, and gives to the former a superiority of carriage.

The lower circle forms a bottomless basin, and has been called the pelvis, meaning a basin. It is made to protect the generative organs, and to afford a fulcrum for the immense muscular developement necessary to enable us to get up off our four-legged position, and stand erect. Man is the animal who has this in the greatest perfection. So the size of the pelvis comes to be a criterion of development. Man has a relatively larger pelvis than any other animal, and the female variety is larger than the male.

The upper circle is designed to keep the present life going, the lower to preserve for the future; hence man, needing strength of arm and shoulder to work for and protect the mother and her babe, has the upper circle the larger, while the woman, needing a place to shield her nestling, to feed it, and warm it, until it be ready to do these things in some degree, by its own exertions, has the lower circle the larger.

In ordinary language, the bones of the pelvis are called the hips. They are attached to the long bones that form the limbs used for locomotion. The curved bone at the back is the sacrum, or sacred bone, from the sacredness of its office. The upper edge of the basin, where the finger touches, when finding the hip, is known as the crest of the ilium, and the bone down in front as the pubic bone. The points at the bottom are the ischii; they are the proper points to sit upon. Though in adult life there is apparently one bone, there have been several joined by cartilage, that has finally all disappeared, leaving a bony basin, its pieces welded together.

On the inside are the evacuating organs, and the wondrous arrangement used in the preservation and reproduction of human germs, while the outside is covered with muscle effecting locomotion in the erect position.

There is a certain similarity between the bones of the limbs of the upper and the lower circles; allowing for the variety of special use, they are made the same. The upper are specially for swift movement, the lower to carry weight also. Both move on the same general principles. The joint of the shoulder and hip are the ball and socket moving all round; the elbows and knees have a semi-circular movement, and the wrists and ankles move only backwards and forwards and from side to side, and the terminal joints of both limbs move only backwards and forwards.

The wrist and ankle are formed of small bones, the hands and feet, too, are formed of small bones. The webbing has disappeared, and the fingers and toes are divided to the palm of the hand and the sole of the foot. The big toe and the thumb both have powers of seizing, but that of the big toe is imperfect, not having the power of apposition. The power of the big toe is rather in a balancing action. In walking, the weight of the body is passed over from one foot to the other, the foot bending for this purpose from heel to toe. The toe is the last to give up the burden, and has power to insure steadiness and grace in transit. It spreads on the ground and grasps it—that is, when it can. When the shoe turns the big toe backward toward the smaller toes, it binds up this power. The true shape of the foot can be seen on the newly-born, and on savages innocent of shoes, hardly on a citizen. The big toe ought to be shorter than the second, and to stand well apart from it, so that the outer edge of the two big toes, placed side by side, would lie close together, or slant apart from tip to joint, not from joint to tip. This would allow the big toe joint to rest back in its socket, and bunions would be much less frequent.

Baby tries to walk in her little shoes; she has barely learned to balance herself on her feet by all the might of her small limbs, and she finds herself on the floor with a thud. A little later and she finds out what it is that hurts her feet, so at every opportunity away go the shoes over the floor. Then she manages to push the rosy toes through the shoe, but round comes the other side of the shoe, and at last the tiny big toe succumbs and is deformed. Baby, grown a woman, is ambitious of a neat, fashionable shoe, and has acquired an enforced gait, that reminds you of a couple of broomsticks, if you have the misfortune to walk behind her. Thinking of broomsticks carries you back to the housemaid fastening on the head of her broom, and you recollect that she secures the broom-head, settling down into the handle, not by knocking on the broom head, but on the far end of the pole. Then if you know how those feet are attached to the pelvis, and you see how they knock, knock, knock, on the flags of the street, you with alarm think what may be happening to the contents of the pelvis? If there be anything to shake down in the basin to which the legs are jointed, what is to hinder it being done?

The prejudice against broad-toed low-heeled shoes is the real reason why it is so difficult to obtain them. The shoemaker, profiting by a few unprofitable experiences, treats his customers as he would his children, and gives them what he really thinks they want, but do not know how to obtain a shoe with a good deal of latitude, but not too far out from the meridian of fashion. Convince him that you know your own mind, and that you will pay him for carrying out your directions, but not for doing something else, and you will get your shoes made to allow your big toe its birthright.

Great possibilities lie within these shoes: they can transfigure the world, and the smile of the ignorant and unblessed votary of fashion calls up pity, not for yourself, but for her. The economy of the shape, too, is worth considering, and lies in the removal of injurious resistance. Shoes made to allow for pressure where it must come will not burst at those points.

There is another evil of artificial bone deformity begun in babyhood earlier than the shoes, for as soon as baby comes in contact with clothes the hand of traditional fashion is upon her. The expansion of her ribs must be curtailed, and the sensitive skin carries inward the tale of compression. The plea is to prevent the baby from injury, and to stifle his cries, on the principle of the idiot boy who who would not blow the bellows, so the organ should not play.

Many people, sensible on many matters, permit custom and that awful functionary, the "old nurse," to subject their babies to bits of torture, the very mystery of which stills any doubt they may venture to entertain. The abdominal bandage that winds round the waist is not needful, it is harmful. The mother will be told that the baby must not cry much during the first days of life. This is true, because the walls of the abdomen require to be left at rest, but the bandage is not calculated to effect that condition. If the mother has a fit of flatulency she undoes anything she can that binds; if she cannot undo she knows pain, and if she were her baby, feeling that pain, she would try and use the abdominal muscles in drawing the deep breath of sorrow; and baby, being much more sensitive to changes and impressions, is likely to suffer from flatulency when the mother has escaped.

Nurse will think baby not too tight, because, when she dressed her, she could put her finger inside the bandage. Whoever met a nurse willing to allow that baby could change in dimension from the time of fitting the bandage to fitting it again? For the bandage to hold on at all, the baby must feel bound. If the baby were not bound, when the flatulency came it would spread its abdominal walls gently and not cry for pain, and if it did cry it would not have all the strength of its resistance centred in that bandage, that would not let it have a long breath, and under which it strained the very muscles intended to be left at rest. The pouting of the navel—the thing held up to the unknowing mother, by the woman of a little knowledge, as the calamity to be avoided, is surely enhanced; and the remnant of the cord, so many are shrinkingly afraid of, is dying naturally, and will, in time, separate as naturally and much less loathsomely than it ever could under a bandage. Baby is not going to be tossed about or handled in any but the gentlest manner, and the cord is much safer folded each day in a clean bit of soft muslin and covered with the loosest of clothing.

The effect of compression at that early age is more baneful than later, for the bones are then softer and more pliable. There is a difference in individuals in the quality of the bone. In the healthy bone the hardness develops according to the demands made upon it by contemporaneous developments. When this timely hardness does not follow the weeks and months, the bony framework yields to the pressure put upon it, the shape is distorted, and the child is said to have rickets. The chest has yielded to the strain of the chest muscles and grown pointed or pigeon-breasted, the legs are bent in or out, or perhaps the pelvis is misshapen. This last is the worst form of the evil, for it may lead up to death, not in the boy's own person; but should the girl, calling him father, inherit his defect and become a wife and mother, the danger will have to be met.

There is a general correspondence between the shape and size of the head and those of the pelvis. There is a correspondence, too, between the length of the fingers and the width of the pelvis from crest to crest.

In a young body, with a weak bone development, the head closes slowly, the teeth come indifferently, the creeping is irregular, and the talking is frequently retarded, indicating a slow brain-development. Babies, and especially such babies, should be kept quiet. They should never be excited in the ways babies understand, and whatever the temptation to show its sweet eyes its sleep should never be broken. It is pain to a young thing to be awakened out of a sleep, and the only chance a baby has to grow strong is to be allowed its rest. When health is broken sleep will prove nature's sweet restorer.

The child stoops because it has not acquired power, the old man because he has lost it. The bones of the child have more phosphorus, the old man's more lime. The bones of the child are soft, they will bend, the old man's are brittle, they will break. The child's backbone is easily bent, the old man's cannot be straightened, because in the old man's the layers of phosphoric matter in the front part of the column is absorbed, and the limey matter at the back part of the column is increased, so as to shorten the column in front and lengthen at the back. The old man, on his stick, with his limbs under him more or less shaky, is preparing, like the fading flower, to pass away; the young child, like the sapling, is looking for something to support it, by which to climb into active life. The child has a conscious impunity from falls; he runs and tumbles, and dances and jumps fearlessly; the old man knows if he make a false step it will surely cost him his life, for he has not the vitality to keep his daily life going and to spare.

This care in stepping accompanies actual change in the shape of the bones. The angle at the hip becomes nearer a right angle than obtuse, and a shock falling upon the line of a right angle is not so readily transferred as from the line of the obtuse angle; this is in addition to the material having become increasingly brittle. Hence the air of care and reserve of force is not without a cause, and is exhibited without comment in persons approaching fifty years of age. The angle at the jaw bone also undergoes a similar alteration and becomes a right angle at middle life.

In some children we find an unbalanced condition between mind and body that leads to bone waste. The mind goes too fast for the body, and wears it out, so these children are bright and restless ones, often happy from the intoxication of their animal spirits, but that intoxication, like others, must balance its accounts, and the bone calls the whole body to a severe reckoning. Some morning you notice your child limping and question it. Attention being called to the motion it ceases, and the answer will probably be, "Oh! nothing, I am not limping! Again, in the morning, you see it repeated, and this time there is pain, when the child will stop to consider it. The pain is at the knee. Now is the time to look after that child, and the best thing to do is to put it to bed and send for your doctor. He, or better she, will tell you to keep the child in bed; that, unless you do so, the pain will soon be felt in the hip, where the cause lies, and that it will be an excruciating pain.

If the disease obtain a strong hold, the vitality of the child will be so heavily drawn upon that medicines will be powerless, for all they can do is to aid nature. It is a case where an ounce of prevention will be worth a pound of cure.

Later in life there is a bone softening, but that must go to the physician. The bone is nourished by blood and nerve power, as the rest of the body is. The food of children, especially those showing weak bone development, should be grains, fruit, and milk. Stimulating foods of all kinds should be sparingly and cautiously given. Meat is not the food such children will thrive best on. Where it can be digested, oatmeal is one of the best, if not the best, bone-making food. The greatest care must be exercised in the cooking. Badly cooked grain-food would be difficult of digestion.

In conclusion, nothing grows without use, and while injudicious exercise will overdraw the recuperative powers, lazy bones will become small bones, and the bones that would perpetuate the race in its pride must labour.

CHAPTER III.

MUSCULAR STRUCTURE.

MAN'S mechanical ideas are drawn from his own mechanism. It is some similar power in himself that enables him to take cognizance of anything. There is a connection or similarity between his own body and the reproductions of his mind.

The child at school is taught there are three kinds of levers distinguished by the relative position of the fulcrum, the power and the weight. If these things have passed from the minds of people who have been sometime out of school, we will call them the point of stand, or rest, or resistance, the thing we wish to move and the power we apply to move it.

Man is himself a big lever. The earth is his fulcrum, his body is the power, and the thing he moves is the weight. You take him to pieces, and within him he has smaller levers in general shape resembling his own general outline—thin at both ends, thick in the middle—hard at both ends, soft in the middle; harder at both ends where he comes in contact with the resisting forces. His feet are magnetized to the ground, he draws therefrom his nourishment—the earth is his subsistence. His head is magnetized by the moving elements around him, and he uses it to preserve the possession of his foothold. The vital fluids are derived directly or indirectly from the ground.

He has, in his system of levers, the means of so ordering the earth that she shall yield to his wants, and the use of himself preserves his powers. But because his powers of endurance are limited and the number of his appliances are also limited, he puts his mind to constructing something as like himself as he can to do his work, to work for a longer time and more in a given time, while he uses his natural form to direct and guide the thing he has made and calls a machine.

If his machine require the co-operation of two unyielding parts they must be connected by something flexible. This is achieved by what are known as springs and bands. Man's bony framework forms the unyielding substance, and the bands between are the muscles. These are bundles of fleshy fibres that make the lean meat of bodies that we cut up and eat. They are most like a bunch of switches, each with its little twigs, and these, again, with the minute divisions you could find if you peeled them. In the muscular band each little fleshy fibre is wrapped in a smooth coating, and is never very long, so that a muscle, besides being divided lengthwise, has to begin again several times. These are enclosed in a smooth covering, that at the ends grows thick and tense where it joins the bone. From the bone to the belly of the muscle the series of tissues become gradually softer and more pliable. The muscles are attached to two bones for the purpose of moving them; one bone acts as fulcrum, the other weight, and the power is contraction. The fibres can draw up and shorten, drawing along with them the bone to be moved. The process of letting down the contraction is called relaxation. The bones have attached to them some muscles habitually in a state of contraction, and others habitually in a state of relaxation. When a bone is broken the contracting muscle will draw up one end over the other, and the work of setting a bone and replacing a dislocation lies in overcoming the contraction of these muscles.

The method is to lay firm hold of both ends and stretch in a line with the bone until it slips into place, then bind it down and go to the surgeon. By doing this immediately you have saved the surgeon and the patient much trouble, and done much to secure satisfaction in the result.

There is one dislocation that, unless traction be quickly made on the muscles that are contracting, death will quickly ensue. This is when your baby falls, and on lifting it you find its head hanging on one side helplessly. Take, then, the child's shoulders firmly between your knees, and the child's head between your hands and gently and steadily draw upwards in a line with the body. The head will slip on to its axis and the baby is saved. You must do this for yourself, there is no time to send for the doctor.

These are the muscles we are accustomed to think we can control, and so we call them voluntary muscles, but as contraction goes on when we do not will it, there are muscular fibres which we cannot control, and of those which we control there are conditions not amenable.

The muscular fibres over which we exercise no oversight are termed the involuntary. The voluntary muscles have the sarcolemma or sheath, and the involuntary are the simple unsheathed fibres; they are further known from the appearance imparted by the arrangement in a sheath of the voluntary muscles as striated and unstriated.

The unstriated fibres are formed chiefly in those parts of the body where the conscious mind would be unequal to the task of keeping guard. They lie in the throat, the blood-vessels, the alimentary canal, the lungs, and notably in the uterus. Their action is painless. When there is pain there is some departure from health. Colds give rise to painful action of the muscles, which is known as rheumatism, imperfect digestion of food does the same, and worry and strain will yield effects similar. The inflammation, colds, and indigestion, and other causes affecting the involuntary muscles are known by differing names according to the results and locality. The throat may swallow with difficulty, the alimentary canal carry on the food indifferently and expel it weakly or painfully ; the blood-vessels may grow weak and sag, and the bladder may be distressing in performing its office, and the uterus may give agony. All this is imperfect health ; in perfect health all muscular tissue contracts and relaxes painlessly, and no amount of religious scruple can alter the fact. The muscular tissue of the hollow resceptacles are, speaking approximately, arranged on the same plan ; there are perpendicular and circular fibres. When the cavity is full or to be filled the circular muscle relaxes and the perpendicular contracts, thus opening the mouth. When evacuation is to be effected, the pressure is carried to the top of the cavity, and the fibres of the muscle, crossing there, push on the contents and force them out.

The alimentary canal is a series of imperfectly closed sacs that open and close to receive and send on the food. This gives the inside of the alimentary canal an appearance of being drawn in by bands. The lower part of the canal is nearly upright, and hence called the rectum. The circular fibres at the bottom are very strong and are given the name of sphincter. The sphincter is found in greater or less tensity round all the openings of the body that can be pursed up. It is the contraction of this circular muscle that does the pursing. The bladder fills and expels its contents in the same way, and, by the power of holding tight the sphincter muscle, the contents can be retained when the bladder is full enough to be emptied. Further up the back, just above the pelvis, are the kidneys, the fibrous organs which secrete the urine from the blood and pass it on to the bladder to be sent off. When the bladder is full enough a good deal of tension is required to hold the opening against the constantly increased quantity from the droppings entering through the ureters from the kidneys. Muscular tissue is capable of a good deal of strain, but has also its limits, and strain on this particular sphincter is never to be trifled with. Very serious and life-long consequences have resulted from this prolonged forced tension.

Between the sphincters of the rectum and the bladder is another sphincter, that of the vagina. It closes a canal that lies in rugæ, or folds both ways. Its walls are formed of muscular tissue, with an additional layer of erectile tissue, and over all is spread a mucous membrane. This membrane in young life spreads over the greater part of the canal, but it is subject to various and many dangers, and may be broken by over-care about cleanliness; by a fit of coughing; by the immoderate scratching caused by irritation; and accidents of many kinds. Some say that a woman, arrived at middle life, and having been subject to the depressions of weak health, cannot reasonably expect to have it whole. Its use is a problem, its name is the hymen. Its flexibility varies in the individual, so that while one would yield to force and regain its position, another would be destroyed. The vagina lies in the arc of a perfect circle, and into the top, still maintaining the incline of the circle, and now an ascending incline, juts the narrow end of a pear shaped muscular body, hollow but with the sides, as those of the vagina, approximating. This body is not in every day use, and when not in use it weighs about 1½ oz., and measures about 2¼ in. in length. When it is in use it absolutely increases its substance. It has no other support than the muscular walls of the vagina; the walls of the bladder down in front and those of the rectum behind; its own resiliency; and a thin membrane thrown part way over it, being an extension of the membrane covering the intestines in the abdomen. Thus, should the muscular tone be lowered, it must fare ill with this organ; it is called the uterus.

The abdomen is covered with layers of muscle, the fibres of which are set in differing directions that insure flexibility and resistance;

adequate to the requirements of food, and, in the woman, of pregnancy. The back is also furnished with many layers of muscle to effect as many different movements. The ribs have muscular layers on outside and inside to draw up the ribs, in order to allow air to enter the lungs; and to assist in expelling old air by drawing the ribs down. Drawing the ribs up expands them and causes them to occupy a larger circumference.

Over the chest are, again, muscles assisting in the motions of the ribs in breathing. Between the lungs and heart, and the stomach and liver underneath, lies a sheet of muscle that also assists in breathing. It is the diaphragm. The neck is a muscular column composed of smaller columns. The head and face are supplied with muscles for their various turns, some only rarely used, so rarely we hardly know we can use them.

The limbs, and especially the lower limbs, having so much to do, are rich in muscular tissue. According to the use and the nutrition is its condition. Tense leg muscles will draw up the instep of the foot, give a slender ankle and full calf.

The Arabs insist that water shall flow under the foot of their chief. Good cushions on the sole gives lightness of step. A shapely hand is better than a small hand. The hand and the heart correspond in size, probably for a similar reason, that of use, for the heart is a muscle. As action calls for blood and blood for muscular motion of the heart, persons of active, benevolent disposition have grown to be known as large-hearted, and, therefore, large-handed. So vanish the pride in a useless little hand!

Disuse tends to weakness and decay. Leave off using a muscle, and presently the power has left it. Fashion insists on this deprivation of use in various muscles, so we see flabby abdomens; crooked backs wearing plaster jackets; and feet that go hob, bob, bob, along the pavement; or perhaps the back and the feet refuse their burden, and the victim sits in a bath-chair. Corsets, by supplying a support for the abdomen and back, deprive them of what power they have, and before the rightful shape and action can ever be restored, the muscles must be made to bear their own burden. There are men and women who are devoting their lives to rectifying these mistakes of outside help.

There is one exception to this general rule of action as the cure, and this is when the uterus, partaking of the tone forced on the whole system, has suffered in the ways to which it is liable. To it we give rest.

Strength of muscle means so much; it means gentleness and steadiness. A tired muscle works in jerks, and a weak one will soon be tired. Somewhere it is written: "Blessed is the woman of strong muscles, for her sons shall rule in the gates." This he will do whether he uses his muscle only or whether he puts foremost his brain power. Experience is going to prove that cultivation of brain power increases muscular power. In the American Civil War it was a recognised fact that the city men and the college men underwent the hardships of the time better than the farm labourer; though, in appearance, the latter had the advantage. And in the previous struggle between England's emigrants and her army the contest went in favour of the brains that were in full use trying to cope with nature. Washington's ragged and shoeless men drove back our elegant English soldiers.

The quality of household work is distinctly superior from the hands of the woman who has learned to use her five senses, to note her facts, and shape her thoughts. Into the cultivation of brain and muscle must enter common-sense. A girl who has exhausted her energies over brainwork will not be able to take violent gymnastics. The heart, sharing in the weakness of weariness, might not bear the strain of the blood rushed through it, and, giving way, might never wholly recover, if immediate cause of death did not supervene. At the same time a relaxation and gentle restorative action is needful.

The muscles of the lower animals call for the same kind of care as our own, and their inability to complain adds to the sacredness of the trust of their well-being in our hands.

As the Arabs connect tensity of muscle with strength of purpose, so Sansom expresses another idea : "Out of the strong came forth sweetness."

CHAPTER IV.

THE NERVOUS SYSTEM.

IT is the most wonderful thing on earth, and the most mysterious, and we ask what it is as a child asks, mother, what is God? More inexplicable than electricity, it bears to it the closest analogy of anything in the material world. It is a power in us, by which we are what we are, and the man that has most of it rules his fellows. We cannot tell whence it cometh, nor whither it goeth. We call it our nerve. According to our possession of it do we live. The laws of supply and demand govern it. It affords the surest lesson in economy. Living beyond our income one day will lessen the income for the next day. The man that lives within his income is the man that tides over adversities, so in his nerve force he is the man ready for emergencies, and it is emergencies which tell in the battle of life. It is because the exigencies of life destroy the nerve force without replenishing that the great miseries seem unavoidable. Until every man is able by his own system to replenish that system, these things must be repeated. Everybody must give of themselves if they would keep themselves. It seems like a hard contradiction that when we feel least able to act, then is our greatest need for action. "To him that hath shall be given, and he shall have abundance, but from him that hath not shall be taken away even that which he hath." The great evil of poverty is that it robs of nervous energy.

As "man doth not live by bread alone, but by every word that proceedeth out of the mouth of God," we must look to all influences surrounding us for growth and strength. Some one has said, "babies are fed on milk and praises," and the grown man has never grown beyond his need of the milk of human kindness. The system by which this influence is carried throughout the body is known by the name of the nervous system. It is a system of tubes of what appears to be a fluid. After death the tubes become opaque and look like tapes of varying thickness and threads. They start directly and indirectly from the brain. The brain is the mass of nervous matter stored in the skull. There are twelve principal tubes or nerves starting directly from the brain, and many more starting from the stream of nervous matter that flows down through the backbone known as the spinal column.

The twelve nerves coming from the brain direct are known as cranial nerves, and each has its special office. It is one of nature's strongest behests to guard the head, and no vivisector's assumptions can add to it, therefore, where is their use? They can neither make nor mend.

Those going off from the spine are called spinal nerves: they have the care of the safety and action of various members and organs; and off from these are nuclei or gangliæ, or fine nerve threads, that preside over the vegetative region; they are the sympathetic system, and they keep all the organs well aware of the condition of the others. Thus the head is in close communion with the most distant member. In the head all the pain and all the pleasure is felt, though the nerves bring the excitment from its source. Sensation is not felt that is stopped in its course through the nerve, the flow of the fluid being prevented. The Chinese women know this when they press their legs against the side of the bed while they are deforming the feet.

Of the nerves direct from the spine, there is a division into two sets, one of sensation, the other motion. There are nerve fibres that feel and act so quickly, that the mind does not realize it, these we call reflex fibres, and the action reflex. They are placed where prompt action is indispensable to safety, as in the eyes, throat, lungs and heart, and uterus, and also the skin and digestive organs, and organs of excretion. They control the blood-vessels.

The twelve cranial nerves go off from the brain through special openings in the skull each to its place. They give life to the organs by which we discern, they also preside over the functions that adapt the outward world to ourselves. The spinal nerves come off from the spine in bundles, through openings in the vertebræ. They give motion and sensation. The nerves run along side by side, separating when their point of departure is reached. They keep the head informed of what is going on in every part, and enable it to defend from, or remove, mischief. The irritation, of whatever kind, is felt at the nerve centre, and irritation at the nerve centre will give the sensation of the part to which the particular nerve thread ought to go. Thus, a person with pain in one leg, will feel it in the same place in another, and legs and toes that have been cut away will seem to be present. And should any accident occur to destroy, or much injure the nerve centre, the feeling of the member that centre supplied will be lost. This results in paralysis. Some children begin life with some nerve centre weak, and have useless legs or feet turned in. The Irish stone thrown at the back of the head strikes on the pneumogastric nerve, and at once stills the working of all that that nerve supplies. These are the throat, lungs, stomach, and heart. The cessation of the heart-beat is instant death.

It is the injury to this nerve that makes the dislocation of the neck so swiftly fatal. The spinal nerves give off at short intervals the nuclei or gangliæ, that lie down either side of the spine, and all down the front of the trunk. These gangliæ separate into a very fine and continuous network of nerve fibre. They make it impossible to confine an influence, evil or good, to one locality. There is no "tell it not in Gath" for our flesh. If the tissues are worn out and require nourishment, the message is sent to the stomach, and we apply the same term to the feeling of discomfort in the stomach that we do to an eager application of the teeth to food that is difficult to break—gnawing. If the tissues need water, the feeling of discomfort goes to the throat, and we pour fluid over it that goes down to the stomach, and is quickly absorbed. The stomach has to call upon the head through the pneumogastric nerve, and if that be in good condition all goes well. If the head be very weary, like a muscle it cannot work, and the food would lie unused, also the water. So the custom is in vogue of beginning a heavy meal with a warm nutritious liquid, that shall quickly convey comfort and strength to the head. Then dishes of a more substantial character may be partaken of.

Should the nerve force of the head be impaired by worry or over stimulation or depression of any sort, then, until it be restored, there will be inability to dispose of food. Hence, persons engaged on disagreeable business, or suffering from some constant physical depressing condition, or indulging in excesses of excitement under unnatural conditions, will be soon an exponent of the evils of dyspepsia. The head itself will be the seat of violent pain in protest of its enforced sufferings. Then some drink that will give a passing strength to the nerve element is taken, and with it some slight food. Of these, Tea is the strongest stimulant we have, Alcohol the quickest and most destructive. Hot water and cold are both stimulating. The nerve, like the muscle, will presently fail to respond to stimulants, and then there is paralysis of the nerves that have been stimulated. The drunkard's red nose is too well known, and the Frenchman says the tea-drinker's congested cheeks are common in middle-aged England. The water-drinker waves a steady hand and shows a clear skin, unless there be some other cause working evil.

The stomach, liver, and intestines all share in the weakened action caused by the loss of power in the nerves from whatever cause. The circulation of the blood and the filling of the lungs are all less effective, and we have cold extremities and pimply skins.

A shock to the nerves will sometimes rouse and sometimes soothe. We soothe the motion of the diaphragm, which we call hiccough, by a shock; and we draw back the waning life.

Stimulants and irritants have all a double action. What stimulates or irritates in its first effects will depress and soothe in its second. Thus, in calculating for a rise, you must reckon for a fall.

The spinal nerves leave the backbone most numerously at the ends of the spine, leaving the middle comparatively free. The lower third of the spine sends out larger ones than the upper third. Thus the organs at either end of the spine are most thickly supplied with nerve gangliæ of the sympathetic system. Those are the lungs, heart, stomach, and the contents of the pelvis. Over the stomach, liver, and heart is a very large ganglia—the solar plexus; from it are meshes spread over all the intestines, and they join those in the pelvis. There are different gangliæ in the pelvis sent out by the special spinal nerves. The communication is so complete that disarrangement in the pelvis is known anywhere all over the body. Sometimes the evil is first suspected by distant sensations. The stomach has likewise a far-reaching influence. Everybody has grown to know that if the stomach be out of order the attendant evils are manifold, but only a few have learned to detect the existence of uterine disturbance from sympathetic irritations. Given its position, surrounded by sympathetic nerve gangliæ running off from the spinal nerve, the spine running from the head, and what shall protect even the eyes and ears and fingers and toes from bearing the burden though not lightening it? On the contrary, all these points lowering, they will send back of their poor estate.

These are the instructions of two different doctors, both of whom had tested the sympathetic sufferings of their different patients. One said, "Always suspect the stomach;" and the other said, "Always suspect the uterus." The fact being that in a woman they stand or fall together. Headache and backache, neckache and chestache, legache and leg paralysis, are all in the train of suffering, and deranged liver and stomach are probably inseparable, in a given time.

The middle of the back is the part least sensitive to impressions of any sort. Points that can be felt to be two on the lips seem only one on the back. This is the spot chosen by the slave driver for the lash. The modern mother chooses differently. She selects the part of the body richest in nerve supply and most capable of permanently bearing the traces of her anger and passing them on to another generation; unless her ministrations have resulted in a paralysis of those nerves that can procure parentage. She insures the child shall know it has been whipped through every nerve of its quivering body.

Every whipping draws the blood to the parts sharing in the excitement, and a habit of fullbloodedness is given. Solomon said, spare the rod and spoil the child, and as he knew about everything, we must allow that he knew about this, and perhaps insubordination must be checked at any cost. Certainly the world could not be ruled by immature or undeveloped intellect, whether in child or the dumb animal. Mark the spots where children are slapped, and you will mark the spots where feeling is keenest. The terminal plates of the nerves are spread on the skin. The reflex fibres from cold cause the appearance of gooseflesh, they relax and give the feeling of rest from warmth. They open and close the pores of the skin that emit a perspiration, constant though varied in quantity. The pores also contain an oil which serves for warmth and protection. The emotion of fear closes the pores and shuts up any poison with which they may be in contact. Another phase of fear opens the pores and causes a clammy cold exudation. Anything that will induce these effects upon the skin nerves by unnatural compression will affect the health after the same manner.

Compression of the skin downward all over the abdominal region, nutritive and reproductive, will, according to sensitiveness and passing circumstances, exercise an unhealthy influence, as much akin to that of fear as may be, judging from the kind of colic both can set up.

The message to the brain, from a skin compressed, is that nature is being abhorred, and there is no peace.

The soothing effects on the skin of a warm or a cold bath lead many to overdo the work of washing. They think that so long as there is an afterglow all is right; but they forget, if they have thought, that all the heat for that glow has to come out of their food and breathing, and that they may require all they can make for the daily round of duties surrounding them.

It has been noticed that many persons will take cold on a Sunday morning and think their Sunday clothes cold; and it has been argued, with probability, that this follows as a result of the hot bath on Saturday, when a thorough soaping took away all the oil the hot water could send to the surface. Because we need this oil, ladies are cautioned, in this matter, against being "righteous overmuch."

The reflex action of this nervous system forms the basis of education. The idea is put before the young mind until it is recognised without an effort. "Line upon line, precept upon precept, here a little and there a little," until it all seems natural. The ways of a gentleman and the ways of a churl are fixed in childhood.

Habits of industry and those of luxury are formed when young, so with habits of decency and indecency. Mothers need to have a watch over their hired help, for the hireling may prove faithless with the little lives under her hand, and they may do what they do do ignorantly. In the matter of work, boys have the advantage over girls; they are taught to expect to do something and the very fixing of their mind on to some object that shall engage its powers is a safeguard and a pleasure. Still, they are allowed to do little things that little girls are not allowed; and in these things the girl, in being taught, has the advantage. Longfellow sings of the necessity of work. He says:

"'A millstone and the human heart are ever driven round;
If they have nothing else to grind, they must themselves be ground."

And also of the impossibility of escaping from the consequences of our little actions, he says:

"Tho' the mills of God grind slowly,
Yet they grind exceeding small.
Tho' with patience he stand waiting,
With exactness grinds he all."

"Train up a child in the way he should go, and when he is old he will not depart from it;" because he cannot.

The working of this nervous system renders it a dangerous thing to subject the mother of an unborn child to circumstances of disgust or the presence of a person who has rendered itself abhorrent to her. The effect on the mind of the child through the mother is suggestive of the manufacture of criminals. Granted, she may do something by self-control, an evil that is constantly pressing must make an impression. Jacob understood this matter when he wanted to increase his wages. The Greeks understood it, and surrounded their expectant mothers with all things lovely, and the Grecian type of beauty has not been surpassed.

This opens up an unbounded field for the improvement of the race through the education and elevation of woman. Man that is born of a woman cannot be any higher than she makes him, and will be as low as he makes her.

Manhood working for womanhood is working for itself.

CHAPTER V.

THE CIRCULATION.

THROUGH the land flow rivers of water. By the water grow the plants; without the water the plants would die, die because they had nothing to replace what they had spent in living. The waters are needful to them, because they present their food in such form as the plants can take it, and convey it through and about them. Elements that lie about them in the earth and in the air are useless without the water.

We speak of supplying a land with water-courses as irrigation. We, too, are irrigated. The water flows through our bodies in rivers and streamlets: they bring for our support and remove for our purity. The colour of our water is red, and we call it blood. It is red when charged with life, but blue when it holds death, and yet when we wish to do honour to men, we speak of their blue blood.

In the stream are little corpuscles, some red, some white. The water by itself is colourless. The red globules give it the colour, and the colour shows the condition of the blood. Waxy paleness shows something wrong with the nerve force, purple and blue skin shows something wrong with the purifying agents. The nerve force is the actuating force for the movement of the muscle that starts the stream, and keeps it in motion, and for the process of exchange that goes on giving renewed life and warmth. The starting muscle is the heart. It is composed of striated muscle, but without the sarcolemma. Its fibres are arranged in the spiral direction most likely to suit its work of receiving and squeezing. It is protected by a double sac, that secretes enough moisture to prevent friction. It is the pericardium. The same sort of covering is around the lungs, and over the intestines.

The pneumogastric nerve supplies the acting power, and the sympathetic system the rhythm of the beating. The same for the lungs. The heart is divided into four chambers, each supplied with appropriate valves and muscular columns for the working of the valves.

These valves are so made that they allow of passage only one way. The heart lies across the chest more to the left than the right, and the apex points to the left and downward to a little lower than the nipple. The beat is the drawing up of this apex when the heart is contracting and throwing out the blood into the great artery, that shall pass it into the system of pipes provided, and known as the system of circulation. The blood is then at its purest. The shock of the throwing of jets of blood out continuously is provided for in the building of the walls of the blood vessels. They are formed of a layer of elastic tissue that swells and retracts, and the shape is maintained by the simple unstriated muscular fibres, and the whole made smooth by a lining membrane. The blood vessels always adapt themselves in size to the quantity of blood driven through them. It is required that the blood shall spread abroad and replenish the tissues; accordingly, the vessels going from the heart or arteries are divided as they proceed. With the ramifications the size decreases and the number increases. With the size the thickness of the walls disappears until at length the number and capacity resemble a hair, and so are called; the vessels are termed capillaries. The walls are nothing but the lining membrane, and now begins the interchange by which we live. With a microscope may be seen the small corpuscles pass out through the walls into the adjoining tissues. In elementary lectures on chemistry children are shown this process by dipping a bladder filled with coloured water into water of another colour, and it is seen distinctly that one colour comes out and the other goes into the bladder.

When the capillaries have given up what they have they begin to draw together and form into larger tubes, collecting as they had divided. It is then seen that they have taken as well as given; the colour in the veins is purple instead of bright red. It is important that the blood now should not be allowed to pass backward, so there are valves formed that close if the current should turn.

As the blood proceeds, it is joined by all the blood that has traversed the head, the extremities, the abdomen, the heart, the blood vessels themselves, and the new material collected from the food in the intestines, and passed through the liver, also by the stream of fat poured in through the lacteal duct. It grows bluer as it goes, and is passed through the left side of the heart, straight into the lungs to be purified. This is done by the blood-vessels being divided again into capillaries to be brought into contact with oxygen. To meet it, there is a system of air tubes that communicate with the open air through the mouth and nose. The first great tube is called the bronchial tube. This divides after the manner of the arteries, only lobules instead of hair-shaped vessels are formed, round which the tiny lines of capillaries twine, and the interchange that results in fresh invigorated blood takes place. It is by the same process of osmosis as the exchange is made in the tissues. The mass of little lobules with the capillaries twining about forms the lungs. As fast as the oxygen is exhausted from the air it is expelled with the chemical compounds it has been able to form. More air is drawn in, the lungs extend over the chest, and far down the back, as far as the ribs go. To allow of the lungs filling with air, the ribs are drawn up and expand. When the full extent of the lung is allowed to fill, the breathing is much slower than when only a portion is filled, and when the air has plenty of oxygen it is much slower than when the oxygen is scarce. Thus, if you look round a crowded room or a church in the evening, you may see the people drawing in air and expelling it at a rate more rapid than ordinary. The sympathetic nerves are telling the pneumogastric or great sympathetic nerve that the blood cannot purify itself, and the nerve force is drawn on for extra muscular strain to gather from the air the life which it has not. And, if the corsets compress the lungs so that they cannot take their full supply, there is the same increased nerve and muscular wear. Then the blood must not stand still; cleaned or not, it must return to the heart, to be sent on to the tissues, to be a disappointment to them, and to have the tissues record the deficiency. Power and beauty alike depart. Lustre from the hair, brightness from the eye, whiteness from the teeth, smoothness from the skin, lightness from the step, and the blood of the capillaries shows up blue on the skin. This indicates a loss in the general nerve force. The blood is collected again into veins, and finally passed into the left side of the heart to be pumped out. The heart is thus a sort of double force pump, and still is no exception to the rule that muscular tissue must have rest. Between the beats there is a pause that in the 24 hours amounts to 8 hours. As a general rule women's hearts beat faster than men's. The pulsation can be felt at the wrist, the artery there coming near the surface. There are a few other places in the body where the artery comes near the surface, but as a rule the arteries are buried deeply in consonance with the value of their stream. The veins are more superficial, being less important in the sense of holding a vitiated fluid and also being provided with valves that would stop the flow one way. In case of a wound arterial blood would be known by its bright red colour and by its flowing from the heart; and venous by the admixture of blue with the red and from the contrary direction of the flow. Moreover, the arterial blood jets out and the venous flows steadily. In tying an arterial wound the ligature will come between the wound and the heart, and in a vein on the other side.

Healthy blood will help to stop itself. Around the edges of the wound will begin to collect a brown mass. This comes from the blood, and is called fibrin. Should the blood be deficient in fibrin the wound will still bleed, for the use of the different applications that are made is to enable the fibrin to settle. People who are deficient in fibrin are known as "bleeders." They are the people who bleed from every scratch, and profusely from a cut. The other principal element of the blood is the albumen.

It builds. The heat of the blood is secured by the active regular exchange between oxygen and the used-up particles, therefore it is always warmer and less fatiguing to have the air fresh. A judicious ventilation is the best preventive from colds. Whatever the amount and quality of the clothing, the body will be cold unless it can make exchanges with oxygen.

The head takes in proportion to the size of other parts three times the amount of blood. The head is sure to know of the want. A tight band-feeling circles around it, and it aches in any locality which may be specially weak. Persons using their heads would often relieve them by rising and stretching their muscles to their full length, throwing up the arms as high as they will go. The movement and pressure of the muscles starts the blood and the lungs, and what oxygen can be obtained is made use of and the head sits down refreshed. The feeling of refreshment extends all over the trunk and down the limbs.

Going out after sitting in a confined room into the open air, and giving the attention to drawing a succession of long breaths will also remove the headache, though at first it may increase it.

The condition of the muscle tells on the walls of the blood-vessels. When it is weak they lag, and the blood does not move on through them fast enough. If it stay too long the tissues around become impaired, and send forth a fluid of some kind. Then we speak of weepings and ulcerations.

Whenever the veins lag they give rise to the same kind of disturbances, but with different names. In the head we hear of congested headaches, in the legs of varicose veins, in the rectum of piles, and in the uterus of congestion, ulceration, and misplacement.

Hence for the absolute cure of these affections the whole tone must be raised. Besides the use of medicines there are appliances to help off the standing effects of past weakness. The longer anything of the kind remains unattended to, the malific influences still at work, the evil of necessity must grow. Likewise, the condition existing may show itself in any or all ways.

There are two kinds of temperaments: one flushes on any excitement, the other turns pale. The flushed face is the brave face, the brain is well supplied with blood. Frequent excitements on a weak muscular tissue may bring on paralysis or apoplexy: paralysis of the nerves controlling the capillaries; then a stasis of the blood, then an oozing or bursting through into some nerve centre. Thus, in a fit of apoplexy, we put our patients upright, while in a fit of fainting we put them downright. In both cases we study the law of gravitation with a view of drawing the blood from the head or sending it there.

Fear makes cold, but joy brings warmth, because of the difference in the nerve action. While people are eager in their search after patent medicines, they seem to forget the influence their mind is daily exercising over their blood. Any violent action of the heart's muscle whether caused by physical exertion, the use of stimulants or the passions of the mind, holds danger for the individual.

In the "Clockmaker" a story is told of a man breaking his heart. The first wonder over that any sentiment could so move that man, the explanation came that he had not been sentimental, that he had been carrying a donkey. Thoughtless gymnastics and the drill may do the same for the girl or the man of too far business worn faculties. Sometimes death follows, sometimes only a delicate life.

The evil passions are all self-destructive. The Old Book says, " Jealousy is cruel, and anger is outrageous, but who is able to stand before envy ? " They alter the hue of the outside surface. The baby will scream in its fit of impotent passion, turn yellow, and come out in a rash, the grown woman will do the same, perhaps more decorously. Green-eyed jealousy has become a proverb. Dr. Richardson says, in his " Diseases of Modern Life," " there is no more expensive luxury than anger." They say "joy never kills," and " the passion of love beautifies." Love is so beneficent in its effects, that the expression of the great creative power is epitomised in the word, and we say " God is love."

In the chapter in Proverbs that the girls know as the birth-day chapter, and look through to find their verses, the son Lemuel is being taught the points of the woman he should choose to be the strongest influence on his adult life. One verse says, "She riseth also while it is yet night" and looketh well to the ways of her household."

Every one who has tried knows that in the early hours there is a refreshing. Work done during that freshness is done better and with less fatigue than when the day has worn. All animals work best while the sun shines. But this woman rose up while it was yet night. What would she do? Being the perfect woman she would know that before beginning on her house she would have to put her mind in order, or her mind could put nothing else in order. In the early morning, when all was fresh and quiet, she would free herself from the cares that surround her, and she would call to her the Great God Spirit that is over all His works, and she would commune in spirit with that strength until she felt calm and clear as to the day's proceedings. She would, all day, hold her own spirit in the love of the early morning, and no untoward tempest would be able to chase the currents of her blood to the spoiling of her complexion.

These are thus a few points needful to secure a good circulation, a good complexion, and a good constitution. These are action; an equable mind; and an uninjured power of the procees of osmosis through the tissues.

CHAPTER VI.

ALIMENTATION.

THE bone grows, the muscle works as the nerve directs, so that the blood flows and the air is drawn in, and a constant consumption is proceeding; so there is a system for replenishing. This is by eating of all the fruits of the earth. But how are the green grass and the many coloured things the brown earth gives us converted into our own red blood and white bone and limpid nerve fluid?

Some are ready as we find them growing on the plants of the earth, they ripen in the sunshine; others need to pass through the fire before they are capable of nourishing; others are passed through a lower organism, and we have concentrated food in milk, and cheese, and eggs. Other things are only useful as a corrective of false or feeble resistance to outside influences that are always seeking our life. The kitchen and scullery of our houses are but types of the arrangements within us where processes from brewing to soap making are carried on. The whole series of chambers forms the alimentary system. It begins at the lips where the sensitiveness of touch tells of kind and temperature, while the nose detects the stage of perfection and instantly rejects what would be unwholesome. The tip of the tongue, too, is quick to discern, and the glands of the mouth supply something that brings out the flavour, while the palate notes it.

The quickness with which the flavour is drawn out depends sometimes on the condition of the article when taken into the mouth, thus moist sugar is tasted more quickly than loaf sugar. The lining membranes of the mouth hardened make the teeth to cut and grind the food. An alkaline fluid, saliva, flows in from glands at the sides of the mouth to moisten the food and prepare it for further fluids. At the back of the mouth there are six passages, two up to the nose, two to the ears, and two downwards to the stomach and lungs respectively. These are the communications for the outside air and outside foods. They are all lined with mucous membrane. The mucous membrane is continued through the stomach and through the intestines down to the anus vagina and urethra. It lines the pelvic viscera. Wherever is mucous membrane a cold followed by the reaction, an inflammation, will cause an increased flow of the fluid secreted by the membrane in its healthy state ; at first it is watery, but varies with its age, and passes through stages of thickening until it bears the appearance of pus, and is offensive. It will pass by different names, according to the place in which it is found and the length of its existence. When it is found in the stomach we should speak of it as gastric catarrh, and it would interfere with the mixing of the proper juices of the stomach and the food that has entered.

The stomach secretes, in its empty state, an alkaline fluid, and, when food enters, an acid. It has been argued that people with very large stomachs are thin because the surface secreting the acid is out of proportion and the acid destroys the food, while the person with a small stomach eats less and gets more good from what is eaten. Dr. Ringer, of the London University, gives it as a general rule that when the subject secretes too much acid, take a little acid before the meal, and when too little take the acid after the meal. This furnishes a reason for the old time custom of taking the pudding before the meat. The stomach secretes also pepsine that is useful in the digestion of the food, and can be obtained from the dead stomach of a fowl or a pig for the use of those persons who have too little.

The stomach is an expansion of the intestinal tube and takes a direction from left to right across the lower edge of the heart, being separated from the heart and lungs by the diaphragm. The whole canal from the œsophoagus to the rectum is formed of muscular fibres lined with membrane and holds imbedded in its walls glands secreting the juices that are poured into the food as it passes along.

The motion of the food is by the successive opening and empting of the saclike formations into which the muscular bands draw the tube; it is the peristaltic action of the bowels, but begins from the first passage of the food into the throat, when it is taken care of by the reflex nerve fibres and is not recalled. The same motion is in the stomach, and the food is thus gradually taken along from the end near the heart where it enters to that of the liver where it leaves and enters the next part of the tube, called the duodenum. The motion of the food is downward, but from untoward conditions the direction can be reversed and we have vomiting.

The juice in the mouth acts chiefly on the starch in the food we eat. It is calculated that three-quarters of all our food is starch. The importance of separating the food well by chewing is further increased by the fact that if the starch passes the mouth incompletely masticated, it must pass on all through the stomach to the action of the glands lying beyond before it will be further cared for. Besides the loss of time and power this must increase the difficulty of the stomach acting on the things which it is its province to act on. These are such foods as we get from caseine of cheese, white of eggs, and the albumen of meat. Such foods are so far prepared by the stomach that on leaving they can be immediately absorbed by the capillaries and conveyed by the portal vein to the liver.

The fat is not acted on save to be separated from its outer coating. Water is absorbed. The way the capillaries come in contact with the food is by arranging them around an artery and vein and projecting them out into the canal. The projections are called villi. They are enclosed in their membrane and lie together like the pile on velvet. In their sheath there is also a duct, called a lacteal to gather up the fat which has been emulsified by the motion and the juices. It requires no further work. It is collected by the lacteals and conveyed to the great lacteal duct that takes it all and pours it into the blood at the right side of the heart. Its use is to make heat, and it is, therefore, the principal force giver. All this absorption is by the osmosis between animal tissues. Given anything that will injure that, and it will not be difficult to imagine some of the results. If the digestion have been good the assimilation must be imperfect; and the food passed on, having loss not only in the material but also in the effort expended to carry it thus far. The food leaving the stomach is a white fluid, and, as it passes along, digestion proceeds by means of the many glands to furnish juices placed all along the walls of the intestine. This, until it comes to the cœcum, or blind valve, just within the right hip. There a change takes place. There are no more juices for digestion; what is furnished now changes the colour and odour, and consistency of the previous white fluid. This requires a larger canal and from cœcum upward, then across, then downward, runs the canal known now as the colon. When the mass now called fœces reaches the lower end of the rectum, the nerve is acted on by its presence and the sphincter relaxes, and muscular tissue forces away the contents. This is the act of defecation. The peristaltic action of the intestines is increased and putrefaction is prevented by the secretions from the liver poured into the tube on the food which is leaving the stomach. It has the effect of making some of the fat into soap.

Should food requiring an ordinary amount of digestion be taken when the system is weary beyond the ordinary, either by head or hand labour, should there have been more than ordinary resistance required to the atmospheric influences, or should the food be taken at night when the nervous force is not of the same power as in the day time, there may be a stoppage of the works, even when we are living a temperate life, as the term is accepted, with regard to eating and drinking. This would be because the muscular tissue would not be facile, the fluids that ought to flow would be too scanty and irregular.

Now appears the bilious patient, and unless it be allowed she is bilious, she will listen to nothing else. The juices of the stomach, anything that is discarded and rejected is bile to her. She knows of sensations and affections far removed from her liver, and for once she has an idea of the sympathy of the organs.

She scarcely knows where her stomach is, all the abdomen serves for the name.

The unappropriated food must, however, be disposed of. Some of it may turn into gas, and be passed off by the regular downward motion or take the backward course. When wind takes the backward motion, a little scouring of the walls of the stomach by means of powdered charcoal is useful. The wind at times becomes incarcerated, and then the nerves give evident indication of discomfort. The form of the fæces when voided is affected, also the colour and sensation. Sometimes the voiding is retarded and difficult, sometimes it is hastened and painless or painful. Either condition is bad, because they both argue the disorder of some portion of the the way, but as a rule the people known as constipated are the longest lived, and the reason is not far to seek. In these cases the food stays longer in connection with the absorbing villi, while in those of loose habit the food that might have yielded nutriment is hastened on. This shows one side of the folly of habitually taking aperients instead of seeking the cause of the mischief and rectifying it. Aperients, or narcotics, may each prove the doctor's worst difficulty when life hangs in the balance. A doctor in America said she never had been able to bring back a child suffering lrom "summer complaint" when that baby had had paregoric. Summer complaint is the diarrhœa, that is very deadly to children, especially in the second summer of their lives, from their inability to withstand the enervation of the prolonged warm summer.

To lessen the risk of the second summer babies are fed on their mother's milk, if possible, until its end.

The liver is a large, useful body endowed with the power of keeping the blood supplied with certain fluids which prevent putrefaction in the aliment and find their way back to the liver. Certain elements have to be extracted from the blood and from the food; when, apparently, there is no fat, it can manufacture fat and store it away in form ready, as a reserve fund, on which the muscles can draw. Sugar undergoes the change that converts it into the same glucose, or liver sugar. The new blood from the intestines must pass through the liver, except the fat, which does not need it, and goes by the lacteals. The power it needs to work by is always that of osmosis. Its tissues must not be thickened. This storing away of fat for muscle is not the same as when a muscle undergoes fatty degeneration. There the muscle, turning to fat, is useless as muscle, and passes away unless it remain to clog the working of the parts where it occurs. Thus, persons eating more than they can use and giving way to sluggish habits, will presently find a weak action of the heart from the decay, through want of proper activity of the many complicated muscular fibres. It could not fail but that personal beauty must go with it. The world needs service, and we all involuntarily seek to preserve that which looks the best, so it is just it should be so. Old age is not of years but conditions, and is slower in its advances upon persons of moderate habits—those of rest included. Rest need never mean aimlessness. In very young children the liver is disproportionately large, and a child laid on its left side is observed to cry more than when on its right, and also is much happier nursing held in the left arm.

The good digestion of babies is best secured by conforming to nature's conditions in position, time, and material. When any deviation has to be made it is a misfortune. If it can be avoided it is a tremendous injustice. A lady who, through male advice, weaned her beautiful baby from a supply of excellent milk, for reasons that were vanity, noted distinctly the fall of the baby voice notes to a scale distinctly lower than they had been on their natural food, and she knew from her previous education in elocution that this meant lowered health. She was not a heartless mother, but the regret came too late. That same mother was an example of another mistake in baby nurture. She had been told to avoid bone-making materials to lessen the compass of her expected child. She did, but her nerves cried out loudly, then and for long after her veins weakened and sagged, her ankles began to turn and other troubles set in that need not have been. If all these other tissues take their foundation on the bone and grow, it is reason to suppose they share in their constituents. There is a better way for securing a painless ending, for the parturition can be painless. A rule of life that is good for any man or woman should be imperative, for the people who propose to put fresh souls on to the world to contend with it; then, if never before, they should take up their baptismal vow and renounce the world, the flesh, and the devil, to bring into existence a new creature with its face looking towards Heaven.

This is a rule that was followed with perfect success at the time of parturition.

Rise early, retire early, take regular exercise, in this case horseback, engage in no cramping employments; therefore give the sewing to somebody else, or sit well while doing it. Take a daily washing of the skin. Drink absolutely no stimulants. Eat only things very easy of digestion. Rule out pastry and such close grained food as pig in any form; also veal, veal is worse than pig; also meat which has been hardened by salting and twice cooking. Unpleasant mental occupations should be ruled out, and unpleasant companions, no matter what fictitious claim they impose; no duty can interfere with the duty of the mother, and the father through the mother.

There are those who say that flesh food should not be taken at all, that a child nurtured without it will be free from the disorders known as humour. If this be so, and if the eating of meat foster the craving for alcoholic drinks, as is said by those studying the subject, the dumb creation are having a vengeance. The subject of stimulants is taking a good deal of attention, and especially that of alcohol. What alcohol does in the system so far as is known is this: it takes, by its affinities, the water and the albumen from the tissues and holds them. These are two elements the system builds on, so this is a positive theft. It acts on the tissues to prevent osmosis and this makes a negative theft. It acts on the nerves and deadens the sense of pain without removing the cause, and starts the blood from the central organs on to the surface, giving an appearance of warmth it has no power to impart, for it holds no heat-making properties. Thus it deceives and, adding insult to injury, it weakens the power of the capillary nerves until what is a pretty sight in a young girl becomes coarseness in the woman. The temporary paralysis of the capillary nerves, giving the blush in the young girl, now becomes permanent, and is the coarse red cheek and nose of the mother. So the young mother is scoffed at for so soon losing her youthful beauty. And then it kills the woman by destroying her moral nature, and allowing her to indulge until her nerve force entirely succumbs. It is recognised as an enemy by the system, and by the first door that will open it is pushed out.

After a hot summer day the fœces will absorb it and diarrhœa will appear. Taken in a warm room and going out into the open air the urine will convey it away, taken in the cold and going into the warm the skin relaxes and passes it off. All the while it is passing off by the lungs. When a nursing mother takes it, it passes off in the milk to the baby; baby gets its amount of milk increased by so much water, and is put into a narcotized sleep and grows fat. That the fat ought to have grown into something of resisting force is shown by the way a baby of that sort succumbs to the children's complaints.

Sometimes the excitement of the alcohol will cause the mother's system to yield up more than she is able to give and soon she must stop nursing altogether. It is surprising how nurses stick to beer; even when a mother sees that her baby has diarrhœa in direct consequence of it she will persist.

Another mother venturing on tea, and finding that by the time it had worked into the baby's system baby woke up and cried; after the third trial, foreswore tea, and baby slept as before she took any. Tea is a stronger stimulant than alcohol, but it does not seem to be attended by brutalising effects. It has been heard of as producing delirium tremens, and many women take tea when they need food and go on working. Many women suffer from ailments that are the result of this, even women who do not work for their living. The feeling of exhaustion that comes after prolonged strain on the nerve power is often best first relieved by a cup of tea to be followed by something that will replace the worn tissue. It does not spread abroad the depraved morals that alcohol does. It can spoil a woman's complexion. Inveterate tea drinkers are observed to become yellow and also to have the congested cheek; and in substance they are apt to run to the opposite extreme from beer. Coffee is not such a strong stimulant, but for persons who can take it, it is held to be the best aid to digestion. Many women feel it in their backs, where its action chiefly lies. Tea and brain fag will both make a copious flow of urine. For all purposes of drink there is nothing that combines so much refreshment when in a condition to take it as cold water, and hot water is an excellent aid to digestion, though that even can be "run into the ground." Water is the basis of all the drinks. There is a similarity between diphtheria and alcohol. Both seize on the albumen and the water, and both give a clogged heart.

Travellers have found that people are gentle or fierce according to the proportion of animal food which they take. If this bear on nations it will on individuals, and persons with a mental idiosyncrasy difficult of control could have their food selected. Our best heat, or force givers, are starch and fat; our best builders are peas and beans, cheese and lean meat. Fruit and vegetables hold salts and mineral matters, they give tone and affect the health of the secretions. Every one knows that apples help sluggish intestines, but not everyone knows strawberries hold iron.

Excepting stimulants and poisons, of much more importance to secure a good digestion is the condition of the system eating than what is eaten. And over and above all other conditions is that of a merry heart.

CHAPTER VII.

ESOTERIC STRUCTURE AND FUNCTIONS, NORMAL AND ABNORMAL CONDITIONS, AIDS TO MITIGATION AND CURE.

THERE is no spare space in our bodies. All is fitted together so that we can move and tumble about to a great degree without things slipping out of place; also the transmission of shock through the bony framework is provided against by the ends never hardening and by their forming a comparatively soft cushion between each. Shocks are less felt in the child than in the adult owing to the pliable condition of the child's bones. After a girl is about ten years of age she will be growingly careful to what shocks she subjects herself, and she will begin to hear from her boy-playmates, if she have been fortunate enough to have them, that she is only a girl. This may go on for some half-dozen years, when the only turns into "such" and "what" and "fine," all being results of development.

About ten years of age the sexual organs begin markedly to settle into the pelvis, and the pelvis assumes a position that brings the excretory organs nearer the line of the perpendicular. Those who have had the care of babies and young children will notice that they look more forward than they do in the adult.

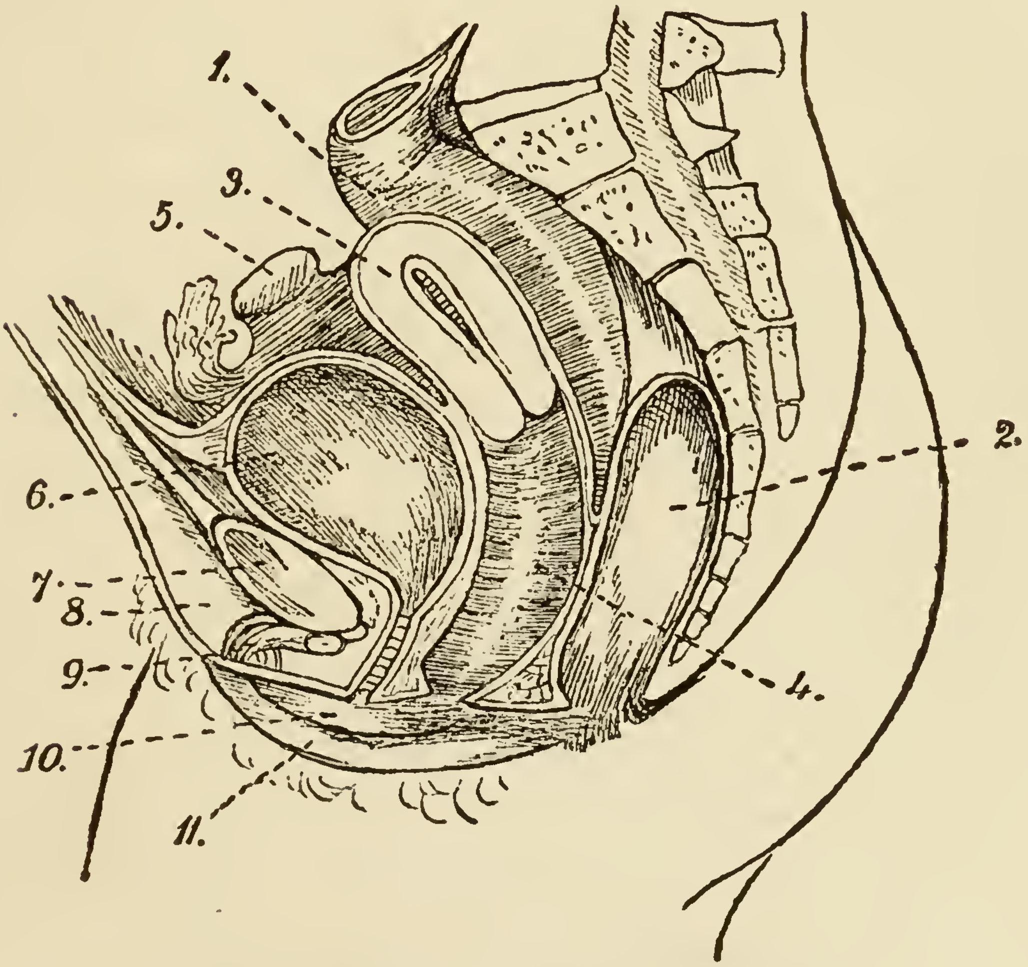


ILLUSTRATION OF PELVIS VISCERA.

1 and 2, Rectum. 3, Uterus. 4, Vagina. 5, Ovary. 6, Blader. 7, Pubic Bone. 8, Abdominal Wall. 9, Clitoris. 10, Urethra. 11, Labiæ.

In this pelvis are the rectum and bladder, and behind the bladder and before the rectum are the uterus, the vagina, and the ovaries.

The uterus, vagina, and ovaries have hitherto been inactive, and the obliquity of the pelvis has left them packed around the waist—every part there only waiting their time. The ovaries are the sexual organs proper, the rest are accessories. There is an evil that may be mentioned here, though not for the first time—the effect of compression. On the skin, where the terminal plates of the nerves are, on the digestive tract pushing out of place and cramping the action, and on the pelvic organs that suffer reflexly from the nerve irritation and from the pressure of the abdominal organs, pressing unduly with a forced pressure, and also from the loss of muscular strength in the neighbouring muscles induced by loss of use. The blood, too, suffers, and the thought from the inability to spread the lungs and take in good air. One way of ascertaining whether there be compression in these regions is to measure the girth with the clothes *in situ*. Then remove them and measure with the lungs filled to their full. Then take the bulk of the clothes that have been removed. Subtract the measure of the bulk of the clothes from the measure of the outside girth with the clothes on, and compare the remainder with that of the measure of the expanded lungs. And think, too, that if the habit of taking a long, deep breath have not been formed, the expansion of the lungs is much less than it will be, should the practice be continued. Dresses ought to be fitted on to a girl with a book on her head. The attitude needed to balance the book throws the spine into its correct line, and all the organs arrange themselves relatively, have freedom, and, therefore, can do their work. If the girl be unused to the position there will be a strain on some of the muscles, but they will soon grow strong, and the individual will find there is no easier way to sit. Added to this it throws in the chin and gives a dignity of carriage that charms some people even more than a pretty face, and for the children of such a form there need be no fear of a plaster jacket to hold up the drooping spine.

A girl leaving home asked her step-father, a distinguished physician, for a simple rule for health, and he replied, keep straight, sit straight, walk straight, lie straight, and not with so much pillow that you keep a watch over your toes.

The inferior dressmaker is a very difficult person to manage; she will not give room where it is wanted, but where she has received an idea it ought to be wanted; and her capacity being limited, she cannot adapt her ideas to the model before her. The effect of her framing is to bring a distressing pressure right over the network of nerves, going from the solar plexus downward. The nerves of the skin are pressed and convey discomfort to the brain and from the brain elsewhere; and the abdominal organs are pressed together and downward towards the pelvis, where there is no room for them, and where they must do harm.

The pelvis is the name of the bony framework into which the organs formed for receiving and evacuating are protected; also the reproductive organs. Strictly speaking the reproductive organs are the ovaries. They lie, or rather are suspended, in the part of the peritoneum known as the broad ligament. Their place is just within the crest of the ilium, and midway between them, partially covered by the same inflammatory membrane, is the uterus, or womb, the nest where the eggs from the ovaries are detained and nourished until such time as they are able to obtain a subsistence outside the mother's organization.

The uterus lies on a rising incline. When in good condition and not pressed down by the bowels being pressed on to it, it is a resilient body, having no other means of support than its own resiliency, the partial proximity of the bladder and rectum, and the muscular walls of the vagina below. There are many plexuses or gangliæ from the sympathetic system of nerves, and also the special spinal nerves for the organs. The connection of nervous tissue is fine, thick, and complete up to the stomach, and is continued into the chest and heart. The spine carries an unbroken communication up to the head and arms; it also sends down to the legs and toes. The rectum and bladder are so close as to be also affected by mechanical position. The kidneys in the back are also near enough to be so far affected by the conditions as to seem to make them their own.

Thus nervous depression in the system from head or stomach or limbs will reach the nervous fibres of the uterus and ovaries and vagina.

Muscular weakness will show here, and the womb or uterus loses its own maintaining power, and the strength of surrounding membranes and tissues goes with it. Then, too, the blood-vessels are not so active to send on the blood, and when the blood-vessels grow weak and sag they add weight, just for the reason that all the parts are weakened.

This gives us a condition of congestion, which, increasing as it will unless corrected, gives inflammation, and then an ulceration will appear on its lowest portion. This is often not felt as it would be in other parts of the body, because it hangs suspended and does not rub or press. Nevertheless it is there, and will do for the blood passing its way just what any unwholesome thing must always do for it, freight it with material that should not have been there for the lungs to purify, and if the lungs are denied their play what next will it do?

The uterus is naturally both heavier and less supported, so it does what might be expected: it slips down. This slipping down is not felt in the same way by all women, and it is known by experienced men that the pain will often go when the conditions are more aggravated; therefore women are counselled to keep themselves under the eye of their doctor. When the parts have actually protruded, as they will from the orifice of the vagina, there is less pain than there has been in the passage.

The pain depends on the way the nerves are affected, and they may tell the tale of pain in the head, anywhere down the spine, and anywhere down the tissue of nerves in front. They may tell of it in the legs and make them painful or paralytic. Sometimes there is no active pain, only a languor and an inability to apply, with a distressing loss of interest in things around.

It is rarely the patient will, at first, be able to distinguish between the first and the sympathetic cause. She will go to her doctor for head-ache, neck-ache, back-ache, chest-ache, heart-ache, liver-ache, stomach-ache, and colic and kidneys, or even gout. She may even be told that her ovaries are diseased, and will have to be eradicated.

Obviously in trying to help such a case the first thing is to cast about for something that will lift the uterus back to somewhere near where it belongs, so as to relieve the troubled nerves. Then give such respect to medicines and hygienic aid as for each special case suggests itself, for a period long enough to make some impression.

The first point of an instrument of this sort should be that the shape shall conform to that of the vagina; the second, that the weight shall be borne by other muscular tissue than the vagina, because resting anything in the walls of the vagina must distend them to enable it to bear the weight; and as soon as those particular muscles get tired they will not be able longer to do so, and the appliance presently will not be able to stay in at all. Moreover, while it does stay in, it can never relieve all the nervous irritation, because it does not raise the uterus, only tries to prevent it coming farther, and encroaches on the neighbouring cavities ; and the third, that the patient herself should be able to remove and cleanse it, and bathe the tissues with which it has been in contact, so that any soreness or inflammation and ulceration shall be quickly soothed or prevented.

Sometimes the uterus will fall forwards, sometimes backwards, sometimes bend on its neck in these directions.

Forward means interference with the bladder, and backward with the rectum. In the bladder it causes a frequency of urniation ; in the rectum, a tardiness of defecation from the mere mechanical reason that the passage is pressed upon and closed until either the stool is made thin or the weight of the fæces forces its way. All these conditions are either directly weakening or irritating, and will interfere with social life by limiting the time the subject can be absent from her home conveniences. The city streets are terribly inconvenient. Such conveniences as there are serve the ends of the publicans.

The pain at the time of the menses is likely to be aggravated, and may be entirely caused by a misplacement; and the blackness under the eyes, as seen to disfigure some women, is relieved, if not removed, by a restoration. The menses is a time when all the parts are congested in consequence of the nervous agitation accompanying the maturing and casting off into the uterus of the egg. If the egg be not impregnated it passes away through the uterus, carried through the vagina in a protection of mucus. The flow of blood is an oozing from the capillaries in the walls. It is the same blood as the rest of the body. It does not coagulate on its fibrine coming into the air as other blood because it has been mixed with the acid and alkaline secretions of the uterus and vagina. When it does clot it is because the blood has come faster than the other fluids. Sometimes what seem to be clots are shreds of the lining membrane that has been inflamed and cast off. Anything that interferes with the general well-being of the system affects this formation, and may make it scanty or copious. The amount of the flow varies with each individual, but it has no right to be painful. It is not peculiar to human females. The habits and excitements of town life are likely to make it both premature and wasting. The ordinary age for its appearance is 14 to 16. Habits influence this more than climate. There is more need of anxiety over too much flow than over too little. Some healthy mothers have had no flow before their first child was born. It appears periodically, the period varying in individual habit until the woman reaches about 50 years of age, but this, too, is not a fixed period. Motherhood has been known to occur at 80, and Sarah was 90.

The woman's breasts are part of her sexual system, and their activity is concurrent and successive to that of the other parts. Their health and perfection, too, correspond. The retracted nipple, which is such a trouble to the baby, is known to be connected with ovarian distress, though it is also attributed to the pressure of dress and to the habit some nurses will practice secretly, if they cannot do it openly, of stripping the breast of the infant to get out the milk, which is often present in both sexes in the newly born. At these periods of menstural flow it is best that the woman should give herself all the rest she consistently can during the first two days. While sitting she can give rest by raising her feet; and she can avoid standing for a prolonged period. It is usually harder to stand than to walk when the uterus is heavy.

The sensations of dragging and flatulence are direct natural consequences of a dropping of the womb. Some people wont work and some wont stop working when they ought to rest. Laziness is a state so abominable that weakness fears a resemblance. Nursing in the sick room is quite likely to bring on these unhinged conditions. Even if the woman know how to move her patient with the least strain to herself there are the unhealthy vapours and the unnatural night work. To most men it is unendurable, but those that have the superior development of the feminine in them make better nurses than women, because of their strength.

In matters of the ordinary household it would be well for women to let men vindicate their superiority whenever there are any heavy strains to be made. Ladies have gone to physicians a long time and have afforded those hopeless cases of ailing that are such a trial to the vigorous. They have gone long and patiently, but their condition does not mend, or only up to a certain point. This should not be and would not be nearly so often if her condition were understood and relieved. The condition of sex has been potent in this matter.

The ovaries are the seed pods, the uterus is the bed where they are nurtured, and the child is the fruition. In all things that live and die there is a similar arrangement, differing, of course, in details. The seeds in the ovary are more commonly compared to eggs, that being the higher form of growth and really what they are.

We give off every menstrual period one of these eggs, which passes about eight days after the cessation of the menstrual flow, but this period varies with the individual.

There are the four seasons in our lives when you can feel, as in the grass and air and birds, a subtle change.

The settling of the pelvic organs into their place in the pelvis is marked by a decrease in bulk round the waist; and now is the time when the good grandmothers, more perhaps than the mothers of the present day, insisted on lacing tightly. Women will tell how they were obliged to wear corsets and suffer the first throes of a fashionable dress. But then, forsooth, they would grow used to it and protest all through life they were not tight because they could manage to push their hand between their clothing and ribs.

CHAPTER VIII.

ESOTERIC STRUCTURE. THE STORY OF GERMINATION.

PREGNANCY is that state of the human female when she is nourishing a fresh representative of the species. The male sperm has been conveyed to the female germ, and the union has resulted in a new life.

The process is of the same character as that accomplished in the plants by means of the stamen and pistil; the stamen, with the pollen being held equal to the male element, and the pistil leading to the seed pod—the female. On some plants they are found together, but on others they are on separate blossoms, and again, the whole plants are separate, and the pollen is conveyed by the wind and the bees.

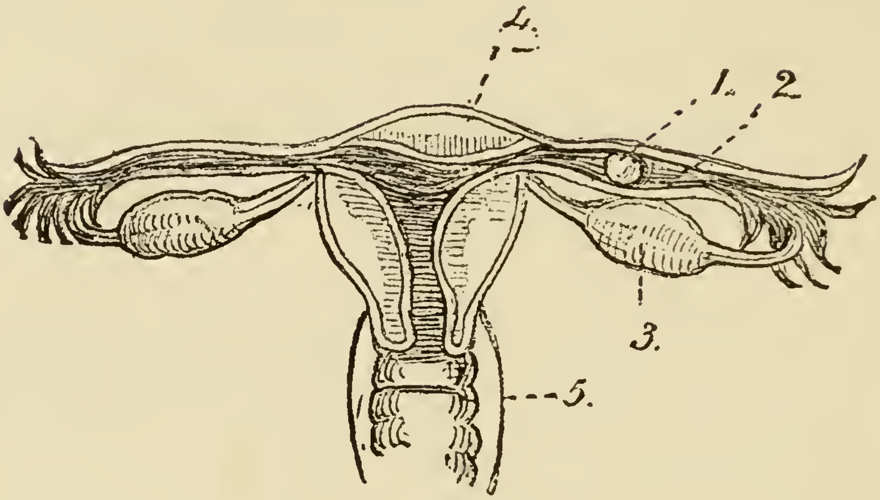
In the higher grades of life the male and female are each sufficiently developed in their distinctive characters to be able to support their individuality, and so we read, in the first chapter of Genesis, that human beings were created male and female, a simultaneous creation in the image of God, to bear themselves on earth towards God's other creations as a God who loves his works would do, and to maintain in his own honoured form the power and the tenderness of the God.

No part of our frame is dishonoured, save by the use we put it to. To the pure we are wholly pure.

The shrinking from exposure of any of the senses of the reproductive organs is implanted in us because of the consequences attaching to interference with them. They are God's storehouse for the future generations—they are sacred even from ourselves, and it is only when the holiest and purest emotions are evoked that they may be approached without sin. Marriage is the institution to guard the results of these holy blendings, but being married does not necessarily make a blending holy.

The male organs are made and placed with a special reference to the female organs. The organisation of both is of a delicate and complicated character, but more so in her, because she has the egg in her keeping from the moment of impregnation. She is the womb man; taking out the b and one m we have woman.

The entrance to the female organs is guarded by folds of membrane called labiæ coming together and supplied with lubricating fluid to prevent soreness from friction. Within these are the clitoris, the point of sensation, then the mouth of the uretha, or water passage, then the vagina. Behind is the anus. A little distance from the opening for the vagina is the membrane called the hymen. Nobody explains its use. That and the spleen continue to afford food for speculation, well if they do not for crimination. Its absence proves nothing but that it is not there. In these matters the best men have it implanted in them that what they ask they ought to give, and they do not expect to be trusted because of a flimsy physical formation. When a woman finds such a one, she may fearlessly trust him with herself and her offspring.



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EGG IN THE FALLOPIAN TUBE, THE OVARY AND UTERUS.

The uterus receives the ovum or egg from the ovary once a month through the fallopian tubes. These tubes are fringed at the end nearest the ovary, and when an egg is ready to pass off they seize the ovary and the egg enters the channel and is conveyed toward the uterus. If unimpregnated, it passes away about eight days after the cessation of the mensual flow and may be found bearing the appearance of mucus. If impregnated it has met the male element and is taken to the uterus, but no farther for nine long months. Before leaving the fallopian tube it takes on an albuminous coating after the likeness of the white of an egg, but much thinner, and is soon absorbed into the centre. The egg immediately begins to be divided; the process is known as segmentation. First, there is a division into halves, then into quarters, and this is continued until the divisions are only large enough for animal cells, and from them the various structures of the body are formed. There is a further division of the sheet of cells into two sheets, an inner and an outer.

The outer one takes the making of the skin, backbone, crebro spinal axis and organs of animal life, while the inner ones takes the mucous membrane of the alimentary canal, and the organs of nutrition. Then there are thrown out two membranes, one to lie close up to the new little organism, and the other to bring in the food, thus foreshadowing the subsequent vocations of the woman and the man. The outer membrane can gather the food, but is powerless to administer it.

While these things are going on in the egg the walls of the uterus are preparing to receive and provide for the embryo. The lining at once begins to throw up protuberances that make furrows. These become soft and enriched with enlarged and increased capillaries. The cervix does not share in this change, but it secretes its peculiar viscid mucus and the channel is stopped up by it. Then when the egg and the lining of the womb are ready for each other the egg slides down into the womb through the opening of the tube and rests in the wall in one of the furrows. The egg goes on increasing, and the furrow into which it falls extends its folds until they envelope it. The remainder of the lining walls of the uterus then gradually cease their activity, but increase it in the part around the egg.

The protuberances lengthen, and in them the capillaries grow longer and fuller. From the membrane encircling the egg are also protuberances, called villi, analogous in purpose to those of the intestinal canal. In these villi are the capillaries that connect the artery and vein that form the blood channels of the new body.

When formed the villi from the egg dips down close into the follicles of the uterine membrane. These together, lying close, form a cushion of blood-vessels that are constantly absorbing one from the other. This cushion draws the strength of the membranes on both sides to itself, so that the villi disappear from the rest of the chorion, or outer membrane, and the decay begins in the lining of the uterus that enables it to be thrown off when the right time comes, while underneath a new one prepares to take the place of the one cast off. The blood passes from the capillaries of the mother to those of the child, and when it has traversed the child's circulation, passes back to the mother by the process of osmosis. The blood the child gets is of the same character as the mother's, and the blood the child gives back carries with it the character of the father. It passes into the mother's system, is purified in her lungs, and reinforced in her alimentary canal. If she have taken drugs they will affect the child, if she have a deficiency in any necessary element the child will suffer from it, if she have a nervous shock the child will feel it, and though the shock may be temporary for the mother it may prove permanent for the child. The child will take a mental propinquity as well as a physical peculiarity. It has been proved, through watching the young of animals, that the female is affected by the male that impregnates her ovum. Animals of sufficiently marked distinction, having impregnated the ovum of a female, have had their characteristics reproduced two or three successive times when the impregnation has been by another male with differing characteristics that could not have produced those of the first, proving thus that the female's body had carried something from the first male and gave it to her offspring by other males.

In the human species the same law is borne out by observations made by physicians regarding disease, and such drug effects as could be observed. No vivisector, so far as we know, has ever had the temerity to vivisect a woman, otherwise we should have been offered reports and observations on the subject—faulty as all vivisectors' observations must necessarily be. All the while the fœtus is growing the case that holds it is growing too.

There is an immense increase in muscular tissue of the simple variety as well as in the size and multiplication of the blood vessels and the quantity of blood. Thus, at three months the sex is visible, and the fœtus rises out of the pelvis. From four and a half to five months the muscular power and freedom of the child enables it to make such movements as the mother feels and becomes, for the first time, conscious that she has given new life.

This change is often attended by a sickness or fainting. The presence of these symptoms is not necessary nor desirable. At six months the child may be born and live, but the chances are against it. The nails are not then formed. A little boy was taken to see his baby sister, a six months' baby, and when he had looked at the little thing that was afterwards his loving companion and a very fine woman, he turned to his aunt and said, "Dod did'nt finish her." He noticed she had no nails on her fingers. There is a nurse's tradition that a seventh months' baby will live easier than an eighth months' baby, but that is a fallacy; each day the child has in its natural home it is growing.

Nine months is the time for a full development. About two weeks before the actual work of expulsion is recognised it has begun by the fœtus settling down into the pelvis, and bringing about the nervous contact that results in the muscular tissue dilating and contracting, according to its office and position, so as to make an opening, and expel the contents of the cavity. This dilating and contracting, when of perfectly healthy muscular tissue and guided by healthy nervous fluid, is painless. The pains of childbirth have no more reason for existence than the pains of defecation or urination.

Here, again, nature makes her protest against propagating the species from imperfect stock; as she does in giving pain and a feeling of disability around the uterus when the system is out of order, though there be no pregnancy. Sometimes even misplacement will entirely prevent pregnancy.

The expulsion of the child is preceded usually by a rush of greenish water. This has been secreted by the inner of the two membranes that were thrown around the embryo, and has gradually separated the embryo from the membrane, maintaining meanwhile around the little body an even pressure, allowing it to take its shape unhindered. The expulsion is accompanied, or immediately followed, by a gush of blood. This comes from the breaking off of such of the maternal blood-vessels as had become interwoven with the blood-vessels from the fœtus, that together formed the cushion of blood-vessels, the placenta.

The great increase of the muscular tissue makes it possible, by its contracting, to wrench off the necks of the blood-vessels, and by the same action to press down and close the mouths on the mother's side. The blood that comes is that which has been in the maternal part of the placenta, and being discharged the flow ought to stop, and in the most perfect health does so. The great proportion of fibrin left in the mother's blood, after she has given more than the proportion of albumen to her offspring, has here its use in stopping quickly and effectually the mouths of these numerous blood-vessels on the mother's side. Much flow afterwards means either too little fibrin or weakness of muscular tissue. The blood has passed to and from the child by the same osmosis that it passes in the mother's own frame and by which she assimilates the fresh food in her alimentary canal. Anything she may have taken to dull the membranes that carry on the process will injure the child; therefore the alcohol-taking mother wrongs her baby, because alcohol does this for the membranes.

When the water comes first the membranes, which have surrounded the child are broken; but it sometimes occurs that they do not break spontaneously, and the child is born in its waters. This is called being born with a caul on its head; and is supposed, by the superstitious, to insure the baby against drowning.

The cord, which is sometimes wound around the neck, and so frightens the mothers in its separating from the baby's flesh, is the combination of the artery and two veins, which have been gathering blood in the placenta by the capillaries, and conveying it back and forth to the child. The heart of the child has not been in perfect use, for the mother's did the work; but the blood has passed through the heart of the fœtus by an opening that is afterwards closed. It is because this closure does not always take place at first, or does so imperfectly, and because the passage was from right to left, that a new baby should first be laid on its right side until assured the heart is working safely. Babies that have the passage imperfect and have the blood still passing through the late door instead of going to the lungs, take on an appearance which gives them the name of blue babies.

The child being expelled with the membranes that surround it, there yet remains the lining of the uterus. This has all been subjected to unusual growth and decadence. At the time the uterus empties itself it begins to cast off also the old lining, and a newer one is ready under it to take its place. The cervix, not having shared in the previous excitement, but being filled by its own viscid mucus, does not shed its lining.

Immediately the uterus is empty it begins to contract upon itself, and the muscular tissue begins to undergo fatty degeneration and is finally absorbed as fat, until all the old muscular tissue is gone and new has taken its place; so that in about two months after birth the uterus is quite renewed and near its original size.

The muscles of the abdomen should also have contracted and resumed their dimensions somewhere near their former lines. There is controversy on the subject of a woman wearing a bandage at this period, and it is held that since the resumption of size depends on the contracting power of the muscle, a bandage should not be worn, as being useless and open to objections like the corsets. This is the truth for good tone of muscle, but as few women have that, and as the muscles may contract a habit of sagging, from which they may never recover themselves, it is well to put on an abdominal bandage for the two months the uterus is renewing its tissue. The bandage need not be all the time a very broad one, but may on rising be such as will support without pressing downward. The difference in treating the ordinary muscular tissue, and that of the uterus with the membranes that surround it, is that the former must have exercise, the latter must have rest; therefore the recumbent position should be maintained for a few weeks.

Frequently during the later months of pregnancy a bandage round the hips and lower abdomen is a great comfort and, in cases of weakness, a preventive of too early a discharge of the fœtus, called abortion, before three months, and miscarriage afterwards. A miscarriage, being a stage of unripeness, is more wasteful of the mother's blood than a full time birth. During pregnancy the woman is peculiarly free from infection of various kinds owing probably to the increased activity and richness of the system, for the woman gains by giving. After delivery she is the most susceptible of beings to anything that can taint her blood. During pregnancy the system is roused to do its best, and Providence holds out another chance to improve the race, for she often developes anything that is lying latent in her system, which being attended to and cured, she avoids passing on to be reproduced in the next generation.

Sometimes a woman is advised by man to have a child, in the hope of finding a scapegoat. Men will sometimes look very wise by saying deciedly what only belongs to God to know, and the woman, trusting the knowledge that at best is only supposition, brings forth a child—to suffer. She may be better or she may not. She had been told no child of hers could live, but it lives, lives before her eyes bearing affliction of her inflicting. Unhappy mother, puzzled suffering child. The ailments of pregnancy are supposed to be legitimate, but they are not so. They are the results of nervous disturbance that ought to be only progressive change, and anything that will remove the phenomena is good. Other disturbances of the uterus besides pregnancy will give the same results. Those men who contentedly ignore these things ought to be put among the husbands who are sick and have toothache and feel badly, instead of the wife—that would seem a fair division of labour, for the wife gets it at the end. The labour of the wife at the end can be much alleviated and hastened by the administration of well-selected medicines, and by educated working on the nerves of the back. The better way is to have no occasion for the attentions of a doctor, which state is rendered possible by living a healthy life.

The improvement in personal appearance worked by bearing a child was neatly expressed by the woman who wished she had been born a widow with two children.

Motherhood should beautify women ; it does so when it is allowed. It is like mercy, twice blessed.

Hall's
Patent Pessary.

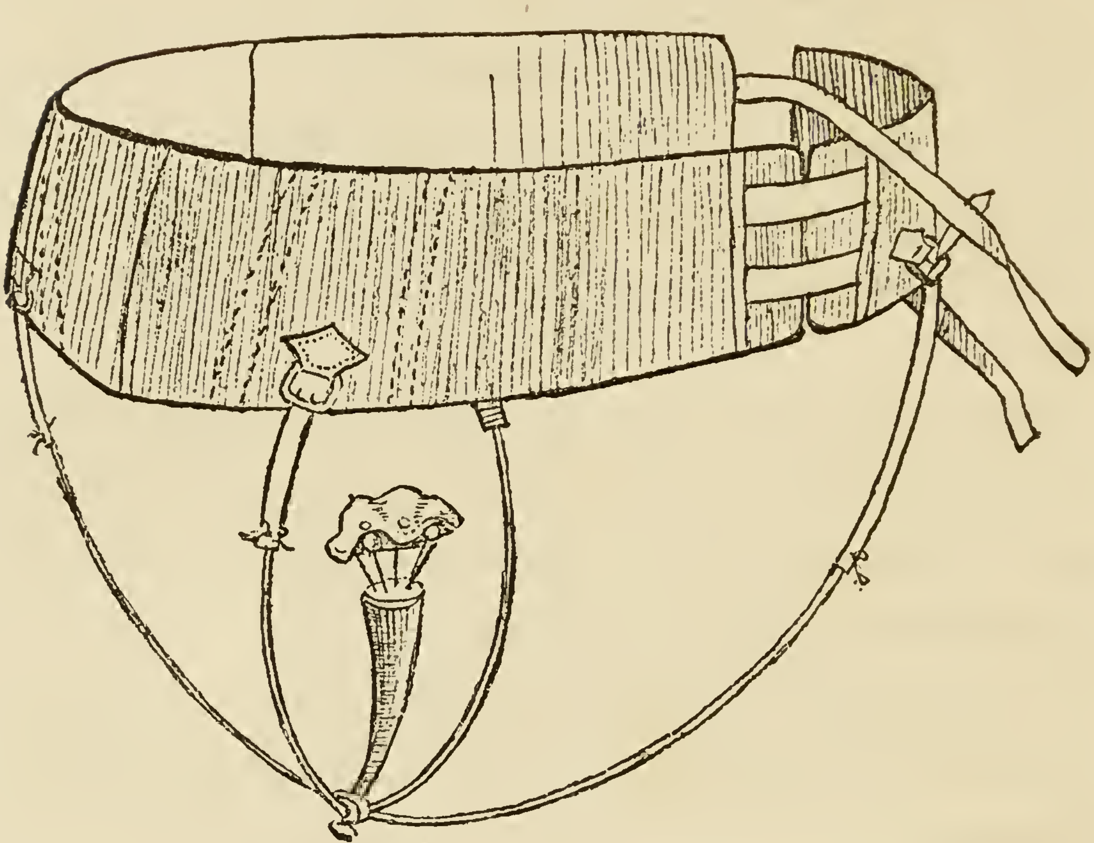
Fig. 1.

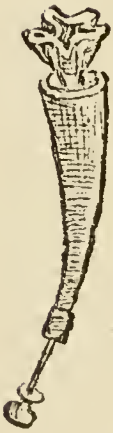
Fig. 2.

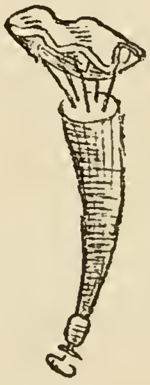
Fig. 3.

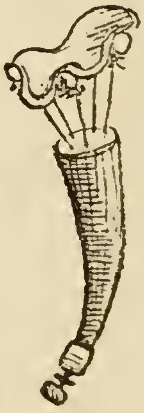
Fig. 4.

Fig. 1. Simple Prolapsus, with belt and straps in position.
Fig. 2. Closed Cup. Fig. 3. Anteversion. Fig. 4. Retroversion.

CHAPTER IX.

THE pessary is designed to raise the fallen uterus to or near its normal position. By this means a great nerve depressor is removed and an opportunity afforded the system to make use of such recuperative means as intelligence shall dictate. It gives rest to the muscle of the reproductive organs, while it allows action to that of the system that decays by too much rest.

The force of gravity is also resisted, by which so much blood is drawn to the uterus and flows away from it; weighting the uterus and draining the system, and giving rise to ulceration. A pessary that fails of these objects cannot restore, though for a time it may alleviate. A pessary resting in the walls of the vagina must unnaturally distend the same, and can only be of any use while there is enough tone in the muscular tissue to resist the weight. The weight should be taken from the walls of the vagina and put on to the bony pelvis. This can be done by means of straps and a belt.

The belt is itself a great support to the weakened muscle and the heavily resting fundus. The belt opens at the back, thus avoiding the heat to the spine, while ease of motion is given to the hips by elastic insertion.

This pessary has hitherto been pronounced "very comfortable," and even before the patient has learned to insert it correctly for herself it gives no pain, because of its compressibility, which, again, is not sufficient to fall short of its object.

The cups are arranged for anteversion, retroversion, and simple prolapsus. Directions for use are given with each instrument.

CHAPTER X.

ON HOMŒOPATHY.

THE height of art is to conceal art. The height of the medical art in preparing medicines leaves nothing by which the ordinary five senses of man can detect the gross condition of the drug which he is taking. "By their works ye shall know them," said the Apostle of the spirits, likewise "by their works ye shall know them," says the high art physician of his drugs. In London at the present day are many men asking for work, and alongside with them stand other men asking for workers. The one set of men are anxious for work, the other for workers, still they do not supply each other's wants; the workers are not fitted for the work—the work is the work of the skilled. It is just so when a human body stands before a case of medicines and asks for help, but not a medicine there seems to give it; the skilled labourer is wanting. Now, because there was no skilled labour in the crowd clamouring for work we should not say there was no skilled labour to be had, and no merit in the skill; we should look further for it—so in the taking of medicines. If there be anywhere the model of a complicated and delicate machine the human body surpasses that model. Man's models are but his own imitations of himself, and he cannot surpass his Maker. Skill is manifest in his construction, and skill must be educed to enable any adequate dealings with its intricacies.

An account was related to me, some time ago, as having been read in the *Lancet*. It was of a child poisoned by three globules of belladonna. The wise men, in their wisdom, applied the stomach pump, and the child died. Too quick had been the action of the three small messengers, and too ill-adapted the means of arresting their progress. If, instead of the pump, they had sent after them three small messengers of similar temper the worst of the evil might have been arrested. And were you to ask me why those three small globules killed that child when we are constantly hearing that Tommy or Susy has gone to the mother's medicine and eaten of it and were none the worse; demanding, with the ordinary laugh of incredulity, what can be said to that? I should say, assuming the story be true, that the child died because it needed Belladonna, and had too much of it. I should try and convey to your mind an idea that there is a difference in people for recognising anything, and that the people who are quickest in recognising any drug are the people on whom it will act with the greatest force. We call this being sensitive to its action. The indications of sensitiveness to a drug are the similarities that exist between the personal sensations and the sensations that are produced in the healthy individual when the drug has been taken in sufficient force to disturb the normal healthy action of the system. Thus, had the child been properly treated, it would have been found that his ailments closely resembled those produced by the drug, and as three globules were deadly, probably he would have been one of those who needed no more of the drug than he would have received by smelling or holding a bottle of Belladonna in his hand.

They say a burned child dreads the fire. To that child, while the burn lasts, the fire is an instrument of torture, that it ceases to be when the burn is healed, or than it had ever been before the child had too much of it. The burnt hand is sensitive now to heat, it is pained by heat, but all our endeavours are to keep away the cool air. We hold the burned hand to the fire, we plunge the scalded hand into hot water, we rub the frozen hand with snow; in each case to restore the hand to its pristine condition, from which it had been brought by those very means—cold and heat. Had disordered conditions not existed, such as are produced by heat and cold, those factors would not have had their influence over the hand. As some people burn or freeze more readily than others, so some feel the action of drugs more readily than others. Skill is required to adjust the remedy to the disease in force as well as kind. Rapid growths usually argue swift decay; so in medicine, it is advanced in the old as well as the new school, that when you want to produce a permanent change, you proceed gradually, not suddenly, to change the conditions that exist; that is, you give small doses, for the same principle underlies the administration of the drugs. The old school know themselves as the regular school; we believe ourselves to be more finely regular, and in our drug-giving observe still farther. We see, and they see, that many things are inert while they are in an aggregate or undivided state, but they do not discover that, when the whole state is broken up and disintegrated, the same substances become exceedingly active. The disintegration is extended to exceeding minuteness, and effects are obtained when the microscope is unable to detect the atoms.

This tries the power of many to accept the statement that anything can be accomplished by the small dose. They quietly accept the fact that they have scarlet-fever, or typhoid-fever, and influenza, and they believe they catch the infection, and catching infection usually indicates to them the presence of some poison in the air, without having the miscroscopist there to tell them they could find the atoms causing the disease, nor has the miscroscope ever shown that the particles are in the air. Nevertheless, they have become satisfied as to the presence of the poison, for, seen or unseen, it has been felt. They cannot choose, then, whether they will or can have faith on the subject, nor does it seem of much consequence that they should, as it makes the fever neither better nor worse.

But let any one offer to eradicate these evils with a dose very small, yet, possibly, not so small as the infection, he would be met by an expression of firm conviction that they never could have faith in that treatment; the globules are so tiny; what can there be in them? They seem to think that their faith is necessary to the cure! Their faith is necessary to the cure, but only so far as it enables them to take the medicine and abide by the instructions accompanying. If you choose to swallow a bit of coal, or a copper coin, or some piece of flint, you might get an uncomfortable mechanical consequence as from an intrusive body, but not a cure for your old cold, your weak ankles, or your repercussed scarlet fever. But finely divide these same substances and you will find them most useful under these circumstances. Each must follow in the way of its calling, and a case needing the coal must not be mistaken for that needing the flint, just as you must apply heat or cold according to the way indicated by the conditions. You must have regard to the fact that you are applying a means of cure similar to that causing the disease, and that you may push your drug too far, as you may push the hand to be cured too far towards the offensive and curative element. There is need of skilled labour, and the drugs yield up their treasures as the earth does, only for labour and capital; skill is the labour of previous days stored away. Homœopathy is a laborious method of giving drugs.

"Unto him that hath shall be given and he shall have abundance, but from him that hath not shall be taken away even that which he hath." Let vitality be the thing possessed; the more a person has the quicker will the drug give back to him what he has lost; but the less he has, the less power will the drug have to help him, until it comes to the dying time, when drug after drug is worn out and, the vitality ceasing, the drugs are inert and the life fades out. The servant girl who keeps her fleshy machinery going, and the big farm man who breathes the pure air, are, therefore, as a rule the people who will re-act quickest to the remedies; while the small and delicate lady, who sits by her fireside with her novel, and does a little elegant shopping from her carriage, may require a much larger, and, probably, a grosser dose to touch her. It cannot be too distinctly remembered that it is yourselves who do the work of recovery, the medicine only puts you in the way. Looked at thus, in the light of a corrective, it may be more easy to understand why it is better to take a small dose frequently rather than a large one seldom. It is on the same principle as the moral education—here a little and there a little. No sermon in the church, once a week, can take the place of the hourly care at home.

Sometimes the idea comes forward that measures for hygiene, and the adaptation of the simple elements around us are ignored by the Homœopath. Homœopaths are the followers of the principles taught by Hahnemann, and therefore by a metonymy they are called the followers of Hahnemann. Being so they should be in the advance for hygienic means and enlightened common sense, for existing writings of Hahnemann show him to have been in advance of his age in these respects. As was said in the Gospels, "those who are not with us are against us." So we may say the converse—those who are not against us are for us. That is any measure which does not mitigate against the Homœopathic principle of drug giving may be used by the Homœopathic doctor. To the query, do the Homœopaths believe in surgery, I answer, yes, in its place, they must. But they need surgery less often than the doctors of the regular school, because by the administration of their drugs they forestall the knife, and remove the evil by making a constitutional cure. One of our professors at college—an old man who had once belonged to the old school, and was likewise dignified by the possession of much grey hair—said that the distinguishing point between an old school physician and a new was, that the old school doctor had no faith in his drugs, while the new school doctor had every faith. The work of the new school physician is not guess work, it runs along the lines of *similia similibus curantur*, or likes by likes are cured.

The likeness, or similarity is shown by the results of provings of the drug on the healthy human body, usually about twenty-seven years of age. These persons take the drug in prescribed quantities and strengths until it produces in them a condition the reverse of health. They then systematically and periodically note the ways they recognise the working of some noxious element in them that should have caused such a deterioration in their physical and mental condition; these we call their symptoms, and these symptoms being recorded do good service when some one comes to us and describes to us how they feel ill. It takes much labour sometimes to find the one remedy out of many that suits best. The result attained by this means is what the vivisectionists aim at, as far as they honestly aim at anything. The consternation a well chosen remedy will inflict on an unbeliever calls up an involuntary smile. They will not obey you until they meet just what you warned them of, and then they will not touch it without minutest directions—they are afraid of it. Then if they begin to speculate, they are not unlikely to pitch upon supernatural powers as the reason why, and to tell you that they cannot understand anything being in the drug unless it be spirit power. The message has even come from a patient who had had a complaint known to be obstinate. "Yes, she was better, but it could not be the medicine, there was so little." Before we decide that matter we shall have to know the difference between matter and spirit, and to define where one begins and the other ends. When you find that in fine division the power is developed, it certainly is not by an increase of tangible matter. In many cases the finely divided dose will have a more speedy and also more permanent effect than the same material in a less divided form. We are accustomed to designate this increase of power by the term potentisation, and we speak of the degrees of disintegration as potencies and number them. A high potency means much division; they increase in numbers in a direct ratio, so that the 200, as compared with the crude drug, has less of the actual copper or coal, but more of the power, set free by disintegration. What that power may be called does not affect the cure it can work. All persons are not equally affected by a given potency, so in addition to choosing the drug there comes the work of choosing the potency, and you must choose correctly or you may fail even with no mistake about the correct drug.

Too much will make you worse if the drug be the right one, and the remark frequently made with regard to the old school drugged patient, "you must be worse before you are better," suggests at least that the worse is the same thing as that attained by an aggravation of a drug which has been carefully chosen on the Homœopathic principle given in too large a quantity, and which in the strength adjusted to the vitality of the patient would certainly cure. In the analogy of the hand and the fire, it would be putting the hand nearer the fire than was needful to cure, and so increasing the burn. It is difficult to get people to believe that if a little will do them good, more will not still further benefit them. They cannot see that going further than the top of the hill takes them down. In a great mountain there are many eminences, and as you rise each seems to be the last, but having mounted to its top you perceive beyond it another rising higher, and reaching the summit of that shows you again another. So with medicine; you get all the good one drug will give you, and must be content to start again to work with another now made manifest until perfect health be obtained. To the attentive mind there will not be wanting in nature and art around analogies and illustrations of the great law of Hahnemann.

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